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Correspondents will please note the change in address of Dr. Roscoe R. Bell, from Seventh Avenue and Union Street, to 710 East Second Street, Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, March 15, 1906.

ANIMAL DISEASES IN THE TROPICS.—At this time, when the subject of tropical diseases is about to receive, and, indeed, is already receiving in some colleges the attention it deserves, I have been reading over the reports presented on the subject at the Congress in Budapest—those of Piot Bey, of Egypt; of Prof. Ligniéres, of Buenos Ayres; and of Dr. A. Theiler, of Pretoria. As this last one covers better and in a more general way the consideration of these diseases in relation to domestic animals, I think a brief *résumé* of his report, as it appears in the work of the Congress, may be of interest.

* * *

The term "*tropical diseases*" is used mainly to include those which occur in warm countries. It has, therefore, a specific etiological signification, which characterizes diseases of warm climates, where, however, there frequently exist a certain number of zoönoses, but, nevertheless, not specific to tropical countries. Anthrax fever and symptomatic anthrax cannot be considered as true tropical diseases. On the other hand, diseases are found in temperate countries which, generally, are more

frequently observed in warm climates, and which present the typical character of tropical affections. These are especially the piroplasmoses, caused by endoglobular parasites. Further than that, at various intervals diseases have been described in warm countries which were found later also in temperate climates; thus the propriety of considering them as exclusively tropical may be questioned. Among these are actinobacillosis, bursattee, farcy of cattle, and epizoötic lymphangitis. Actually some diseases, like dourine and sheep variola, which were in other times met in cold countries, exist in warm zones. Contagious diseases, as rinderpest, contagious pleuro pneumonia, and glanders are widely distributed in the tropical regions of the Old World; some of them have been known there for centuries, and it may be said that these countries are their real home. It would be wrong to apply the name of tropical to these affections, since they do not possess any of the characteristics of tropical diseases. Certainly there are specific causes which are favorable for the existence of the diseases mentioned, but these must be looked for in the primitive civilization of the native population and the common religious conceptions of epidemics. On that point an improvement is noticeable in South Africa, where the most fatal diseases have been successfully treated by inoculation.

* * *

Epizoötics observed only in warm climates by Dr. Theiler are classified as follows:

(1) Those due to vegetal organisms;

(2) Those due to extravisible organisms;

(3) Those due to protozoic organisms.

Among the diseases of the first group, hæmorrhagic septicæmia of sheep and the disease of Argentine called "entequi," are the only ones considered as exotics. The other hæmorrhagic septicæmias, such as anthrax fever and symptomatic anthrax, are, in general, observed more in warm than in cold countries; but heat and dampness cannot be held responsible for their appearance, as is often done. The real cause for their

existence is to be found in the want of knowledge of the cattle breeder regarding their true nature. Blood diseases due to spirillæ are not considered by the author as belonging to this class, because they are transmitted by intermediate hosts, especially the ticks, and because they present consequently the typical character of a tropical protozoic disease. This applies to the Brazilian fowl disease and the South African spirillosis of cattle.

* * *

In the consideration of the diseases of the second class, contagious diseases are excluded, as they are found all over the world. There remain three South African diseases, the horse-pest, the catarrhal fever of sheep, and the heart-water of cattle, sheep and goats. The first two have some common peculiarities, but they are not identical, as they can be inoculated only on animals of respective species. All the observations and deductions based on experiments show that these diseases are propagated by the bites of night insects. The author tells of a process of inoculation which has been worked out and consists in the simultaneous injection of serum and of virus, which give an attenuated disease. Heart-water is an inoculable disease, transmitted under natural conditions by the tick *Amblyomma hebracum.* The nymphæ and the adults transmit the disease. The three diseases just mentioned have this in common, viz.: that the immunized animal does not hold the virus in its blood, as is the case with some piroplasmoses.

* * *

The third group includes the diseases due to protozoa. The piroplasmoses are first described and classified in two secondary groups. In the first are found redwater or Texas fever, the piroplasmose of the horse, of the dog, and probably also that of sheep, characterized by a typical and big piroplasma. This group differs distinctly from the second, which has a small piroplasma as the pathogenous agent and to which belongs the tropical piroplasmosis of cattle. The piroplasmoses of the first group are inoculable to animals of the same species with blood

from sick and from immune animals, which is not the case with the tropical piroplasmose.

* * *

The various diseases met in warm countries are considered as identical, as South African experience has proved that the immunity acquired in foreign lands, holds good, with but few exceptions, against redwater of South Africa; besides which the ticks that act as hosts for the same parasites belong to the same genus or are only varieties of the same species. European hæmoglobinuria is transmitted by a different species of tick, hence it is possible that there are different varieties of *Piroplasma bigeminum.* Dr. Theiler draws attention to the fact that the *Piroplasma bigeminum* is not met with in the immune ox under its usual shape, but in a form similar to that of tropical piroplasmoses. In the report the disadvantages of inoculation with immune blood are well discussed, and attention is called to the danger resulting from the simultaneous inoculation against bovine pest in regions where Texas fever is epidemic. To this day there are no experimental researches to show by what tick the equine piroplasmose is transmitted.

* * *

It is, however, about certain that the disease is communicated by ticks, an opinion which is corroborated by daily observations. The tick which propagates canine piroplasmosis is, on the contrary, well known; it is the *Hemophysalis leachi.* Experience shows this peculiarity, that the infection passes through the egg, the larva, and the nympha only to be communicated by the sexual adults. The author has prepared a serum against this disease, and confirms the fact that the blood of the immunized animal from which serum is derived remains infected.

Tropical piroplasmose differs in every way from Texas fever. The immunity which is acquired against the last disease does not protect from the former. In addition to this, quite a different species of tick transmits the disease, viz., *Rhipicephalus appendiculatus.* The infection does not go through the egg:

it is taken up by the larvæ and the nymphæ, and is communicated exclusively by these and by the adults.

* * *

Tropical piroplasmosis is of paramount importance to South Africa. It threatens to ruin the cattle industry. Inoculation of Koch is a failure. Strict legislation is essential and eradication possible; since it has been proven that an infected area purifies itself provided all susceptible stock is removed for at least fourteen months. Fencing of all infected farms is to-day ordered. Other prophylactic measures are also suggested, dipping among them. But dipping with various parasitical remedies is useless in regions already infected, unless the infected herd is removed to clean ground. Periodic dipping may prevent the disease, as it may kill all the ticks.

* * *

In a second part of the report, Dr. Theiler treats of the diseases caused by protozoa, studying them all, except dourine, because of their great importance to South Africa, and calling especial attention to the fact that some tropical tripanosomiases are propagated by biting flies and that the same probably applies to all of them. In conclusion, the author says: Typical tropical diseases are blood diseases propagated by extoparasites, whose development is much favored by the conditions of warm climates. Among the various causes responsible for the introduction of tropical diseases in South Africa are: colonizing of these countries, trading of cattle, development of mining industry, and war. Finally, the appointment of veterinarians possessing bacteriologic knowledge imposes itself as collaborators on the administrative staff of all and any new country where tropical and other diseases annually decimate the live stock.

* * *

BELGIAN EXPERIMENTS WITH BOVOVACCINE.—In the *Annales de Bruxelles* for February there is among the original articles the report of the Committee appointed by the Secretary of Agriculture of Belgium to estimate the value of the method of von Behring, the anti-tuberculous vaccination. It seems as

if all that had been claimed for it had not been demonstrated again and again. At any rate, the Belgian Committee was composed of Director Dégive, Mr. Stubbe and Mr. Mullie, veterinary inspectors, and Prof. Lienaux. The experiments were conducted upon eight animals, which were divided into three groups, to be submitted to three different modes of infection—by inoculation, by injection of the virus, and by cohabitation. In the first group were 3 animals and 2 controls, in the second 2 animals and 2 controls, in the third 3 animals and 3 controls.

Without entering into the minutiæ of the experiments, I may resume briefly the results of the post-mortems. In the first series, two inoculated by subcutaneous injection, when killed presented "quite a number of small chalky nodules in the lungs - - - four chalky nodules in a pharyngeal lymphatic gland," otherwise nothing abnormal. In the other, "all the organs were healthy except two mesenteric lymphatic glands, where a caseous nodule was found." The witness had generalized tuberculosis. The third animal of that series, inoculated by intravenous injection, when killed was in a cachectic condition; nothing else. In the series of animals infected by ingestion, one presented when killed no lesion whatever; the other had a retropharyngeal gland suppurating, but no bacilli in the pus; all the other organs sound. The two witnesses were more or less extensively diseased. Finally, in the test by cohabitation, one had five softened pulmonary deposits, some nodules in the bronchial, mediastinal and mesenteric glands. The other two animals had no lesions. The three controls had all lesions, which varied more or less in the lungs and lymphatic glands.

* * *

By a careful reading of the entire experiment there may be found some points which will seem obscure and difficult to make agree with the conclusions of the report. At any rate, here they are: (1) The insertion of the virus-vaccine of Behring has not given rise to tuberculosis. That which it gives is an attenuated form of the disease, not progressive and spontaneously retroceding. (2) Vaccinated animals generally resist

natural contamination. (3) The resistance of the vaccinated can be overcome by the inoculation of large doses of active virus. (4) In practice, it will be necessary to keep, as much as possible, vaccinated animals away from infected localities during the whole time that they will be under the influence of the virus-vaccine. (5) It will be prudent to postpone the vaccination of calves in stables where broncho-pneumonia prevails.

* * *

ITALIAN EXPERIMENTS WITH BOVOVACCINE.—In my notices of the experiments that have been carried out on the Continent to test the value of the bovovaccine of Behring, I have not made any remarks upon those that took place in Italy at Mortara, whose results were said to have raised an unbounded enthusiasm and were to be celebrated by a great feast. The reasons for my apparent neglect were that I feared the experiments had not been carried out in the very best manner, and I did not want to express an opinion before all was well known. It is not yet, but the journals of Milan are now and then coming out with partial results of the experiments. Four vaccinated bovines were slaughtered on January 18. One of them had tuberculous lesions of the mediastinal lymphatic glands and a caseo-calcareous nodule in the lung. One paper publishes an article which shows that "the vaccination of Behring promotes actively the infection among vaccinated which are placed in a contaminated centre. The vaccinated are hypersensitive during the time necessary for the impregnation of immunity, and it is to that error of experiment that the partial failure of the results is due."

In the *Giornale della R. Societa*, Prof. Mazzini, who was the director of the experiment, answers that it was precisely to test this point that the experiment was held, viz.: if the method of Behring, acknowledged as theoretically correct, could enter into practice in Italy, and principally in regions where tuberculosis is prevalent.

The slaughtering of the vaccinated will go on.

THE PRESENT STATUS OF IMMUNITY AGAINST TUBERCULOSIS.—This experiment of Brussels comes to substantiate once more a fact which has been made evident, viz.: that it is possible to immunize with a certain activity bovines by introducing into their organisms varieties of bacilli of a different specific origin, and principally those of human origin, and if a new confirmation was necessary, as remarks Leclainche, in the *Revue Générale* of February, that confirmation has been given since 1902 by the conscientious researches of Thomassen and of Pearson.

But, as we have said before, there is a great distance to travel between the immunization of laboratory to practical vaccine. And, indeed, as Leclainche adds: "The recent experiments of Budapest, of Mortara, of Melun, of Brussels, have shown us that the method of Behring has many inconveniences. We already know that it is dangerous for animals that have some pulmonary lesion. We know that it is also dangerous in infected centres, promoting actively the development of latent infections among the vaccinated. And we are only at the beginning. The objections of Marks and Casper to the vaccination were perfectly just, and we appreciate the significant reserve of German veterinary journals and of the practitioners."

Can we from the cool consideration of all those critics and facts come to the conclusion that antituberculous vaccination will not be realized at a future time? No. New methods are studied in every direction, new experiments are made, and have already given satisfactory results. We know that even their value is tested outside of the laboratory, but on farms, and from all that it is possible to say that under some special conditions and with a *proper* vaccine the operation can give positive results without all the objections that exist at present.

Let us wait!

* * *

FEEDING OF ARMY HORSES WITH THE RESIDUE FROM THE KITCHEN.—The *Revue Générale* gives a concise account of an experiment which has been published in the

Zeitschrift fur Veterinarkunde in relation to this subject.

The ration of artillery horses is so small in the German Army that experiments have to be made to substitute different food from that which is generally used, but which proves so insufficient. A curious experiment has been made which consisted in the utilization of the remains from the kitchen, which are sold at very low price to fatten pigs. The horses belonging to a battery of campaign artillery were the subjects of the experiment. They received a varied *menu* consisting of the following: Meat of beef, pig, smoked meat, lard, sausage, fish and fish-balls, beans, potatoes, rice and milk, onions, carrots, dried vegetables, soups of various kinds, coffee, cocoa, tea, dried fruits, etc., etc. These various foods were given diluted in water, so as to form a kind of mush, which was thrown over the food that formed the ordinary ration. A kind of selection was made of the fortunate animals which would be allowed to partake of the treat, and these embraced those in bad condition, reduced in flesh, having a capricious appetite. They all took it with avidity. The experiment lasted two months, and after that length of time the horses of the battery were the fattest among all those of the regiment, and the number of colics, which had been previously quite large, had diminished in noticeable proportion.

For an herbivora, feeding on sugar and molasses, to drop to a common omnivorous diety, like us weak mortals, is a change indeed. I wonder if some swill dealer is not at the bottom of this?

* * *

BIBLIOGRAPHY.—To-day my bibliographic notes will be on foreign works.

First, a glance at a German pamphlet, by Prof. Dr. Ostertag, of the Imperial Veterinary School of Berlin. Prof. Ostertag is already well known in America—personally, as some of his graduates are there; professionally by the numerous works he has published, and principally by his "Hand-book of Meat Inspection," which through the translation of Dr. E. V. Wilcox has become

the classical work of America. The Professor has visited the United States, and has published his impressions under the title of "Das Veterinarwesen der Vereinigten Staaten von Nord Amerika," in a little work of 150 pages with 17 illustrations. As my knowledge of German is very limited [it is wonderful how little a fellow knows], I cannot enjoy all the good things the Professor has said of America; yet I have been able to understand the greater part of what he says of our schools, which, either private or branches of universities, he has visited in New York, Philadelphia, Chicago, Kansas City, San Francisco, Ames, Ithaca, etc. His remarks on most of them are very correct—indulgent in some, severe for others, and complimentary for a few. In reading that portion of the book, I recognized the names of many of my old friends, who certainly can but feel proud of the deserved recognition they receive in the writings of Dr. Ostertag. Besides the part where veterinary institutions are spoken of, and which I confess was the most attractive for me, there are descriptions of a few American diseases which he observed, and, above all, the consideration of the inspection of meat, which is of peculiar interest to the author. The work of the Bureau of Animal Industry and all that concerns the sanitary work done by it, is most interesting. I am quite sure the work will be read in America with great pleasure (at least, by those who are not as ignorant as I). The publisher is Richard Schoetz, Luisenstrasse, No. 36, Berlin.

* * *

The second work I have on my table is from St. Petersburg. A Russian work always finds me at home, especially if it is printed in French, as is the case with the "Archives des Sciences Bibliogiques," published by the Imperial Institute of Experimental Medicine. There! I am in the presence of different material; indeed, this book contains an article on "The Regeneration of the Superrenal Capsulæ," by Mr. Labzine; "A Case of Infection of Pest in Laboratory," by Dr. Zabolotny; a study "On the Elastic Tissue of the Ventricles of the Heart in the Normal and Pathological State," by Dr. Pojariski; a work

on "The Anatomo-Pathologic Alterations of the Superrenal Capsulæ During an Infection by Streptococci," by Mr. Labzine; and then contributions to the study of infection through the air, to the study of lipasis, etc. The work is handsomely illustrated with colored and photographic plates.

* * *

I have, besides, to acknowledge the receipt of the *Chicago Veterinary College Quarterly Bulletin* No. 2; the announcement of the annual meeting of the Pennsylvania State Veterinary Medical Association; the Constitution and By-Laws of the Ohio State Veterinary Medical Association; and the Appendix of the Board of Veterinary Examiners for the State of Maine, wherein an alphabetical list of all persons who have a legal right to practice veterinary medicine, surgery and dentistry is published. I find that of a total of 95 there are 36 graduates and 59 non-graduates, 8 of whom are licensed to practice dentistry only. A. L.

EDUCATIONAL PROGRESS (?) IN NEW YORK STATE.

When the veterinary schools in New York State were by law placed under the control of the Board of Regents the requirements imposed upon matriculants were raised from a simple elementary examination conducted by the head of each school to ascertain if the applicant was capable of understanding what would be taught him, to 24 academic counts, which are the equivalent of a two-year high school certificate. The effect upon the classes by this sudden lifting of the requirements for entrance was to greatly diminish them; but the quality of the students accepted was vastly improved, and it was felt that the ends secured justified the sacrifice of quantity. The schools which depended upon the revenue obtained from student fees were content, and were willing to bear their burden in consideration of the evident uplift of veterinary education thereby. This standard was considerably higher than that of any other State in the Union where a veterinary school was located, and some of the most careful students of the educational problem

thought that the Empire State, leading the van by a wide margin, was fulfilling her mission of "excelsior." But the law demanded that she must go still higher, in company with the schools of human medicine, seemingly unmindful of the fact that veterinary education in this country is in its infancy, and that we had just made a great stride from the merest rudiments of any basic requirements to quite a high degree of classical knowledge. The Regents demanded 48 counts for veterinary matriculants, or the equivalent of a four-year high school course. The effect of this tremendous bound was immediate and decisive: it was a flood-gate placed in front of the doors of the colleges, for not a student matriculated in the two New York City schools, which had hitherto had, under the old system, large attendances, and under the 24-count requirement fairly large classes. Even the Regents were appalled at the destruction wrought, and they soon recanted, reducing the requirements temporarily to the former standard of 24 academic counts. At this point it remained until January, 1905, when it was again boosted, not by slow degrees, but suddenly, to the four-year high school equivalent again. Under the lesser requirement students were permitted to enter upon their studies even though they had but a small percentage of academic counts, providing the lacking ones were secured as they progressed with their technical training. But when the student was called upon to fulfill the higher demand he was required to be in possession of 36 points upon entering, the remaining twelve to be made up before beginning his second term. As a result of the return to 48 counts, one of the schools of the State, which had been going rapidly forward numerically, had its freshman class cut down from fifty in 1904-5 to about twelve in 1905-6. The effect upon the other school—there were now only two schools in the State, the two old city colleges having amalgamated—was not so marked in diminution of numbers, since its former classes were not large, but the new conditions imposed put an effectual barrier against its progress. We are informed by the Dean of this school that forty young men were refused admittance, although they were

prepared to qualify under the 24-count system, and these young men, better educated by far than is demanded by most other colleges of the country, were forced to go to lower-grade schools elsewhere or else abandon the study of veterinary medicine altogether.

Not content with virtually stifling veterinary education in the State of New York, the Regents announce that, beginning with June, 1906, the standard will be further raised to 60 counts, although it is claimed that this is only an apparent elevation, and that it is really an adjustment of the values of the various component elements, and is included in the four-year course. The statement accompanying their announcement is not lucid, and to the ordinary lay mind is clumsily set forth. A gentleman who has had considerable experience in deciphering Regents' enigmas places 54 counts as the total of the new order.

Whatever be the correct interpretation, the fact is very plain to those who are willing to see that veterinary educational progress in the Empire State has received an effectual estoppel that is almost a crime against reason on the part of those responsible for the condition.

Meantime in the colleges of other States the enrollment of students was never so great as at present, and the list of graduates in any one of several of such schools at the recent commencement exercises outnumber all three classes of both the colleges of New York. This statement is not intended to estimate the quality of the students; but to make the point that the ranks of the profession of the country are being filled almost totally without the aid of New York, and how can the latter be contributing to veterinary progress when it fails to attract a sufficient number of students to make it worth while taking her into serious account in the great body of new recruits.

We do not imagine that any one who has read this publication for any length of time will accuse it of a lack of regard for veterinary progress, for it has steadfastly advocated a reasonable, regular advance in entrance requirements wherever the science is taught, as well as a lengthening of the terms and a

strengthening of the curricula whenever conditions will permit; it does not defend, but strongly condemns, those institutions which refuse or fail to press forward with the educational advancement of the age. It has uniformly advocated in its pages the lifting of the latter class of schools higher and higher until the American veterinary diploma shall mean something definite. It believes that New York should lead in this upward movement, keeping well in front, demonstrating to its sister States the feasibility of the advancement, by securing plenty of students of the best class. But when New York commits educational suicide by putting the bars so high as to prove to the rest of the country that the effort is a failure, she excites derision and retards progress by discouraging other States in making efforts to raise their standards. The student-less colleges of New York are a menace to advancement in veterinary science in other sections, and they are not contributing enough practitioners at home to supply the death list in the ranks of the profession. What the result of this will eventually be on legislation may profitably be taken into consideration, and the sooner the Regents return to a safe and sane policy the better it will be for the cause of veterinary education in this country. Full classes of well-educated students are better collateral than rooms full of empty benches in colleges which pride themselves on unreasonably high standards.

THE NEW HAVEN MEETING OF THE A. V. M. A.

Elsewhere in this number of the REVIEW will be found a vigorous letter from Secretary John J. Repp addressed to the members of the national organization in relation to the forty-third annual meeting, which will be held at New Haven, Conn., August 21, 22, 23, and 24. It is less than four months off, and the membership should be actively preparing to signal their return to New England by making the 1906 convention a more glorious factor in professional progress than Cleveland, St. Louis, Ottawa, Minneapolis, or any of the red-letter gatherings since the new century began. The association spirit is

stronger to-day than ever, and the national association should be its highest exemplar, for it should set the standard in all that is best in the body professional. The idea is well appreciated by its officers, but few of the members tarry to consider the great anxiety and responsibility borne by those who are chosen to guard its interests by looking after all the details of the annual gathering. The Secretary's task is beset by innumerable difficulties, and, strange to say, the preparation of his literary program is largely a matter of personal solicitation rather than voluntary. Even the latter few break in upon him at the eleventh hour, after he has worried for weeks over their failure to respond to his oft-repeated invitation. It is unfair to treat a faithful officer thus, and all who intend to contribute papers or other material should in justice to Secretary Repp notify him at once, thus permitting him to arrange his program and see the weak links in the chain.

President Lowe early in his administration called for one thousand recruits to the membership, using his personal efforts to have every member bring in at least two new ones. Stupendous task though it is, it is not impossible if each one will do his part well. Resident Secretary White, of Tennessee, in a letter printed elsewhere, pledges every eligible veterinarian in his State! Secretary DeVine, of New York, is writing in all directions in behalf of the idea, and others are working along the line President Lowe has indicated. It must be remembered that increased membership cannot be obtained at the time of the meeting, for by a new rule, adopted at St. Louis, the application must be in the Secretary's hands thirty days before the convention. There are usually many visitors to the sessions, and stimulated by the association spirit applications were formerly poured in at every seating of the Executive Committee; but now all such opportunity to swell the roll is lost, and the recruits must be deliberate seekers after fraternal recognition. This arrangement imposes greater responsibility on the members to do missionary work in behalf of the organization, for many men feel that they must have a personal invitation—nay,

a personal appeal—to do a thing which is for their everlasting benefit and a thing which is their plain duty.

New England and the entire East are put upon their sectional pride this year, for, having nursed the Association in its infancy, it returns a vigorous adult, strong in numbers and influence, with a standard of excellence set at a high mark by the West and the North. Little Connecticut may be relied upon to have perfect arrangements for a successful meeting, but Massachusetts, and New York, and Pennsylvania, and New Jersey, and all their sister States must be prepared to attend in full complement and to see that a programme of surpassing excellence is provided. This, of course, is difficult of concerted accomplishment; but every member must do his individual duty, and out of it all the result cannot be in doubt. While pride will prompt the East to neglect nothing, the membership everywhere should feel it a privilege to contribute to the program and to lay aside the arduous duties of their careers in the heat of August, and, with their families to make it more enjoyable, journey to the land of the nutmeg and partake of the good things now being arranged by the loyal sons of Connecticut.

Get ready for New Haven!

THE SAN FRANCISCO DISASTER.

The unprecedented disaster on the Pacific Coast has awakened throughout the world a greater confidence in the nobility of human nature and the brotherhood of man. Such sympathy and succor were never recorded in the history of the world, and the sad event has its redeeming lesson in bringing man to a closer reliance upon the Great Creator.

While no definite news has reached us of the fate of our brother veterinarians, it seems impossible that all could have escaped without at least great financial loss, not only individually, but in the destruction of the property of those whom they served. Veterinarians everywhere will extend to them not only sincere sympathy, but will doubtlessly contribute materially to their relief from their great distress.

ORIGINAL ARTICLES.

DIAGNOSIS AND TREATMENT OF VENTRAL HERNIAS IN BOVINES.*

RÉSUMÉ OF CLINICAL LECTURES.

By CH. BESNOIT, Professor of Bovine Pathology at the Veterinary School of Toulouse.

(*Continued from Page 36, April Review.*)

(5) *Tumor.*—It is scarcely possible to make a mistake between hernias and tumors; the suddenness of their apparition and the relative rapidity of their development are sufficient, besides their other peculiar characters, to avoid the error. There are cases, however, where hesitation is allowed; that is when the walls of the hernial sac are very hard or have undergone fibrous or bony degeneration.

I have already spoken of a hernia in which the intestinal circumvolutions, instead of being placed under the skin, had slipped between the various muscular layers of the abdomen; the walls of the hernial sac being formed by the skin and by parts of the muscular layers of the region, had become very hard, and made exploration very difficult. It can be understood that under such conditions, especially when the lesion is well circumscribed, and of small size, a tumor might be suspected. The error is so much easier when, sometimes, the various layers forming the walls of the hernial pouch are submitted to a low kind of irritation which brings on progressive induration and increases their hardness. In these cases exploring puncture and rectal exploration will give information on the contents of the sac and on the presence of an abdominal opening: they constitute the best elements of the differential diagnosis.

Hamoir and Masson have recorded an interesting observation of the ossification of the sac of one voluminous ventral hernia in a cow, which, without information on its origin and de-

* Translated by A. Liautard, M. D., V. M., from the *Revue Vétérinaire.*

velopment, one might easily have taken for a true neoplasm on the road to calcareous transformation or partially ossified. The animal had carried for a year, on the inferior part of the left flank, immediately inside of the fold of the stifle, a well circumscribed hernia, hemispherical, as big as a man's head, which little by little had become densified on its surface, and finally was very hard.

The cow was killed and the autopsy showed that the walls of the hernial pouch were composed, in almost their whole extent, of bony plates of several millimeters in thickness, and united by densified fibrous tissue. The contents consisted of only a few loops of the small intestine, adherent together and to the fibrous parts of the sac.

This transformation of the walls of the hernial pouch rendered the hernia almost inexplorable, and no doubt that if positive information on its development had been obtained, the diagnosis would have been difficult. In such cases rectal exploration, and principally exploring puncture made on spots in the wall not ossified, seem to form the best means of investigation ; and yet I am convinced that they would not be sufficient to avoid errors in cases where a true tumor was undergoing calcification or ossification.

(6) Abdominal Distension.—Of all the lesions which we have so far studied the differential diagnosis of, there is none which comes nearer to hernias and whose positive diagnosis is more delicate than pseudo-ventral hernias by distension of the abdominal walls.

Those distensions are frequent in bovines, much more so than would be supposed in the presence of the silence of authors on this subject; as up to this day they have scarcely been mentioned except by Mr. Detroye. It is true that Prof. Moussu seems to allude to them ; but he mixes them with spontaneous ventral hernias, for which he claims a pathogenic theory, which can evidently be applied only to simple abdominal distensions.

There exists, indeed, a fundamental difference between these last lesions and spontaneous hernias. These occur, like the

former, by themselves, without external violence, under the simple influence of an exaggerated weight applied upon the inferior abdominal walls, more or less reduced in resistance, the muscles stretch, become thinner, and then give away, allowing the ectopia of the abdominal organs, which then come and lodge themselves under the skin. On the contrary, the others are not accompanied by abdominal laceration; the various layers constituting the abdominal walls, muscles and aponeurosis, are not submitted to any appreciable alteration except a certain amount of reduction in their thickness; they simply allow an excessive distension under the pressure of the viscera, and consequently a hernial opening is never present.

The pathogeny of these distensions is established easily. For Prof. Moussu they result from the progressive sclerosis of the abdominal walls. Following "troubles in the nutrition of the wall, whose cause it is difficult to perceive, the elastic layer gets atrophied and does not fulfill its function of an automatic surcingle; the muscular layer progressively becomes sclerotic from the linea alba towards the lateral parts, and, the elasticity being there no longer, it gets thin and allows its distension." The absence of any muscular lesion in my personal observations, as well as in those of Mr. Detroye, does not agree with this theory; if, then, the mode of development admitted by Prof. Moussu is possible, it does not seem to take place in the majority of cases.

Mr. Detroye believes that a "sudden pressure from inside the abdomen, made upon the abdominal walls, during a jump or a fall, produces a partial rupture of the aponeurotic fibres; that the weight of the gastric mass promotes afterwards the progressive elongation of the fibrillæ, that have remained intact, but insufficient to preserve to the abdominal surcingle its normal passive resistance." It would seem to me rational to admit also the possibility of a slow and gradual distension by the simple action of the weight of the abdominal organs worn out by old age, chronic diseases, or repeated gestations. Indeed, the disease is observed only exceptionally in youth; my observations were all in aged or more or less worn-out cows.

Pseudo-Hernias by Abdominal Distension is met either on the right or left side; in the latter case it resembles hernia of the rumen; in the former, the intestinal or the mixed hernia. They may be classified under two distinct clinical types: (1) circumscribed and well-defined tumefaction; (2) diffused tumefaction or dropping belly. Both forms occur indifferently either to the right or left side.

The *first type* (Figs. 8 and 9) is characterized by a clinical aspect absolutely similar to that of hernias; the swelling is well circumscribed, the outlines well marked. The exact diagnosis is delicate, as the distension, occurring slowly, is overlooked at the beginning. We are called only when the lesion is old and large in size, presenting all the characters of chronic hernia, of the rumen on the left side, or of the intestine or uterus on the right. The only element of differential diagnosis rests on the absence of the hernial opening; but on one side, one has to deal with a heavy mass, at times enormous, which renders all attempts at reduction very difficult; and on the other, the very dependent situation of the portion of the distended wall, with the presence in its interior of abdominal organs, and principally the rumen, very often render the internal exploration per rectum almost impossible.

This form of distension occupies exclusively the most dependent part of the flank, a little below the fold of the stifle. It corresponds anatomically to the aponeurotic triangle formed between the muscular portions of the great and small oblique and the transverse of the abdomen; on this level the wall is composed entirely of superposed layers of aponeurosis; it is there that it offers its minimum of resistance.

The *second type* (Figs. 10, 11, 12, and 13) constitutes in general a lesion much more voluminous than the preceding; but it is diffused, badly defined, with irregular outlines, gradually losing themselves with the remainder of the abdominal wall; the belly is, so to speak, dropping and pushed on one side of the abdomen, to the right or to the left. At the beginning, when the lesion is not yet well marked, there can be no possi-

ble error as to its nature; but later, when the distension has assumed great proportions, it often resembles those large ventral hernias with hernial openings measuring sixty or seventy centimeters in size, through which the greater part of the abdominal viscera (rumen on the left side, intestine, uterus, and even part of the rumen on the right side) were out of the belly and lodged in an enormous subcutaneous pouch. The diagnosis may then present real difficulties. It can be established only after a positive assurance of the absence of any tear in the abdominal walls; but, considering the large size of the distension and the enormous mass of organs that it contains, this exploration will always necessitate the decubital position of the animal, and demand long and difficult manipulations for the reduction.

In many instances our advanced students called to examine quite a number of cases of abdominal distension have always almost unanimously made a diagnosis of ventral hernia—evident proof of the difficulty that exists in the differential diagnosis of these two kinds of lesions.

Two observations of the first type have been recorded by Mr. Detroye—one to the left, one to the right.

In the first case, it was a small cow brought to the abattoir to be slaughtered because of a very large and incurable hernia. A puffy tumor, two or three times as big as a man's head, was situated on the lower region of the left flank; exploration indicated on that level an evident displacement of the rumen, but did not allow the detection of any tear in the abdominal wall. After death, the minutest dissection of the various musculo-aponeurotic layers of the region was made. It showed that the abdominal wall was perfectly intact in every layer; there was only a simple pushing outwards of the intercrossed aponeurosis of the great and small oblique and of the transversalis muscles; the fleshy portions of these muscles had resisted, and, bounded above, forward and behind the basis of the pseudo-hernia, which downwards was limited by the external border of the rectus abdominis and the tunica abdominalis. Every one of these muscles were normal; the stretched

aponeurosis alone was slightly thinner and had its fibres spread apart.

FIG. 8. LEFT ABDOMINAL DISTENSION—CIRCUMSCRIBED TYPE.

The second observation related to a pseudo-hernia, a little smaller, and developed in the same region of the right flank of a cow in her eighth month of pregnancy. The anatomical peculiarities of the lesion were exactly the same as in the preceding case, but the distended region was occupied by the uterus.

I have myself observed several cases of abdominal distension with the two types described above. Here I will record a few of the most prominent characteristics.

Circumscribed Type.—1. A very old cow (Fig. 8), bought for surgical exercises, had on the lower part of the left flank, immediately in front of the stifle, a large puffy swelling, regularly round, well defined and about 40 centimetres in diameter. With the animal kept in standing position, the exploration made in every direction, was difficult, and no hernial opening could be found. Still the regular contractions of the rumen could be well felt under the skin. I believed it was a hernia of the rumen, but reserved my diagnosis on account of the failure of the manipulations for reduction and the non-existence of appreciable muscular tear.

The lesion being incurable, the animal was slaughtered. At the autopsy the careful dissection of the abdominal wall revealed that this was intact and that the rumen was entirely lodged in the abdomen. The tumor occupied the triangular space

of the lower part of the flank, bounded inside by the external border of the rectus abdominis, behind by a small portion of the crural arch and the interior border of the fleshy portion of the small oblique, forward and outside by the posterior border of the fleshy portion of the transverse abdominis. It was due to a distension of the superposed aponeurotic layers of the region and constituted by a simple diverticulum of the abdominal cavity in which was received a rather large portion of the rumen. In the composition of the wall of this diverticulum entered successively from inwards outwards: the peritoneum, the aponeurosis of the transverse, small and great oblique muscles of the abdomen, the tunica abdominalis, a thin band of the panniculus, and the skin. All these structures were considerably thinned, but were intact, except the aponeurosis of the small oblique. Thinner than the others, there were in its central por-

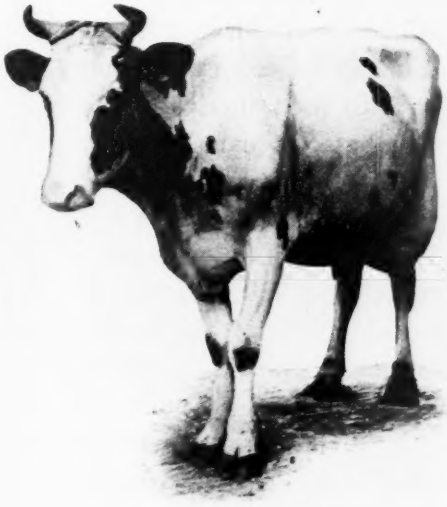

FIG. 9. LEFT ABDOMINAL DISTENSION—CIRCUMSCRIBED TYPE.

FIG. 10.—LEFT ABDOMINAL DISTENSION—DIFFUSED TYPE.

tion and in the direction of the muscular fibres, two elongated openings, parallel, one 20 centimetres long, the other 10, separated by a hard fibrous cord, 2 centimetres around, resulting from the pushing outwards, by eccentrical pressure, of the fibres of the border of those openings. These two openings cer-

tainly had nothing to do in the etiology of the lesion; they were simply due to the rupture of a few fibrillæ of the muscles promoted by the excessive thinness of the aponeurosis, and the wide separation of their constituting fibres.

2. The cow represented in Fig. 9 had on the left flank a tumor similar in all points to that of the preceding cow: it occupied the same situation, had nearly the same size, and presented the same anatomical peculiarities, even the tearings. The aponeuroses were distended and their fasciculi thinner and wide apart; but there was no rupture, and the surrounding fleshy parts had no appreciable lesion.

The diagnosis was particularly difficult, although the preceding case made me suspect the exact nature of the second.

Diffused Type.—1. Figs. 10 and 11 relate to a very old cow, in which during the gestation that preceded her last pregnancy a small tumor had developed in the left flank. Already in the first months of her last gestation this tumor had increased in size, and became larger than a man's head. Seven months gone in her condition, she was brought to me; then the lesion was very large, as can be seen in Fig. 11.

FIG. 11—LEFT ABDOMINAL DISTENSION —DIFFUSED TYPE.

The whole left inferior part of the abdomen was involved in a diffuse swelling, without marked outlines, spreading gradually over the outer surface of the abdomen. The belly was dropping, pendulous, pushed to the left and downwards, so to speak, while the right side, on the contrary, seemed normal. Manipulation with the hand revealed in this tumor the presence of an enormous puffy mass; evidently it was the rumen, whose contractions could be seen through the skin. Finally all attempts at reduction re-

mained fruitless, even while the animal was lying down in dorsal decubitus ; an opening could be detected in the musculo-aponeurtic walls of the abdomen. Rectal examination was impossible, as the rumen occupied the entire diseased region.

On account of the great extent of the lesion, of its diffuse aspect, and especially of the absence of any hernial opening, the supposition of hernia of the rumen was laid aside, although it was thought of at first, and a diagnosis was made of a simple unilateral abdominal distension. The autopsy confirmed the diagnosis in showing the integrity of the abdominal walls, which were only very thin on the left side, especially towards the aponeurotic region of the flank, by the pressure exercised by the rumen packed with food to such an extent that its own walls were thinned and distended.

2. A cow (Figs. 12 and 13), about ten years old, in good fleshy condition, is brought to the clinic for a voluminous swelling of the right side of the abdomen. This swelling is generalized and diffused, but more marked towards the inferior regions of the flank ; the belly is dropping and on the right side arrives

FIG. 12. RIGHT ABDOMINAL DISTENSION—DIFFUSED TYPE.

to the level of the hock. The perfect integrity of the abdominal wall is immediately made out by external palpation as well as by rectal examination. It only seemed distended, a condition which is also indicated by the large size of the foramen of the right mammary vein, which is twice as big as that of the opposite side. On the left side the abdomen presents nothing abnormal.

Finally, the right hip of the animal (Fig. 13) is much lower than the left, result of an old fracture of the external angle of the ilium. Evidently the case was one of unilateral abdominal distension of the right side and not a ventral hernia.

Without being difficult, the diagnosis, however, demands a close examination of the animal; a comparison between Figs. 12 and 14, which represents a mixed ventral hernia of the gravid uterus and of the intestines, will show how the aspect of a simple distension may at first glance be mistaken for a true hernia. It is probable that repeated gestations with heavy and large products may have reduced the resistance of the musculo-aponeurotic zone of the right flank, the fœtus being always, in cows, pushed to the right by the rumen. Then under the regular and constant pressure from the digestive organs, this same zone has gradually given away and the belly has dropped. The fracture of the ilium has besides somewhat contributed to accentuate this dropping in, giving rise to a lowering of the small oblique abdominalis and a relaxation of its aponeurotic fibres.

FIG. 13. RIGHT ABDOMINAL DISTENSION—DIFFUSED TYPE.

The condition of the animal is considered incurable, and she is slaughtered. The post-mortem confirmed the diagnosis, and showed that, notwithstanding the fact that the disten-

sion was localized to the right flank, it was due, as in the preceding case, to the pressure from the rumen, which in its enormous proportions came in contact with the right abdominal wall and pushed it outwards.

3. This last observation relates to an old, thin, worn-out cow, without any commercial value, which was brought to our surgical exercise. Her photograph was not taken, but the lesion that she presented had the same general aspect as those exhibited in Figs. 12 and 13.

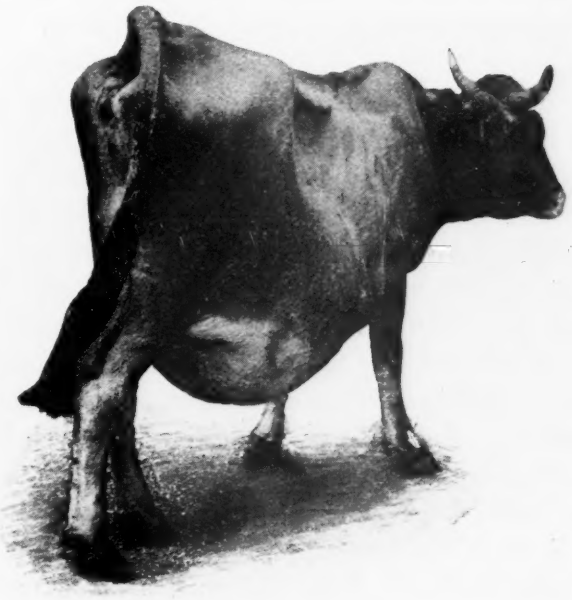

FIG. 14. INTESTINAL AND UTERINE HERNIA (ANTE-PARTUM).

Five or six days before she was brought to our clinic, the cow had presented on the right flank a small diffuse tumefaction, in which, according to the owner, a sucking noise told of the presence of liquid. The days following the swelling had disappeared, and, always according to the owner, the abdomen had suddenly dropped.

When I saw the cow the abdomen dropped on the right, simulating at first glance a ventral hernia. Error was so possible that

the external exploration of the abdomen revealed the presence on the right side of a kind of subcutaneous slit, 10 or 12 centimeters long, with borders slightly thickened, and situated at the middle part of the flank, in an almost vertical direction, yet slightly oblique from upwards downwards and from backwards forwards. But a more careful examination revealed that this opening was incomplete and did not go through the entire abdominal wall nor allowed entrance into the abdominal cavity. Besides that, the wall of the abdomen could be felt all over under the skin, and rectal exploration showed, even better than external manipulation, that the abdominal wall was not perforated.

Consequently it was a case of simple unilateral abdominal distension of the right side, complicated with a partial giving away of the aponeurotic region of the flank. Taking into consideration its situation and direction, in all probability this giving away as involved in Case 1, circumscribed type, the aponeurotic fasciculi of the small oblique muscle.

As to the etiology, it seems to me it rests on the basis advanced by Mr. Detroye: In this thin and worn-out cow, the right abdominal wall has little by little been stretched, worn out, and reduced in thickness by numerous gestations; at a given moment a violent blow has been followed by a partial aponeurotic giving away, manifested by the œdematous swelling at the beginning: The abdominal surcingle being less resisting and insufficient to support the weight of the viscera, has become overstretched and the abdomen has suddenly dropped.

The post-mortem, followed by the dissection of the right abdominal wall, confirmed the diagnosis. There existed in the aponeurosis of the small oblique, near the fleshy portion, a slit, 12 centimetres long, with thick borders, congested, infiltrated, and covered with clots of blood, indicating its recent formation. The other musculo-aponeurotic layers were thinned out, but free from any lesion.

TREATMENT OF VENTRAL HERNIAS.

All the methods preconized in the treatment of umbilical hernia in the horse, have by turns been recommended and re-

sorted to against ventral hernias of bovines, yet they are far from having the same value, and, besides, the best among them answer to very different indications. On this last point of view, it is proper to successively study the treatment of recent, that of old, and that of spontaneous hernias.

RECENT OR ACUTE HERNIAS.

The method with *bandages* has, in all times, been employed by preference in the treatment of recent ventral hernias. Its object is to keep the hernia reduced during the time necessary for the complete cicatrization of the accidental opening of the musculo-aponeurotic wall of the abdomen. It cannot be efficacious except at the very beginning of the accident. Later, the borders of the hernia sac have separately cicatrized, and even long reduction of the hernia is powerless to allow them to unite again.

Bandages with pads, analagous to those that some practitioners employ against umbilical hernia of colts, and made on the same principle as those used by human surgeons to relieve crural and inguinal hernias, have been recommended by Serres.

In reality, they are most frequently inefficacious, at least with adults. On account of the ovoid form of the abdomen, they are easily displaced, slipping forwards or backwards of the point where they have been applied. As recovery requires that the pressure upon the hernia be constant and lasting, these bandages, then, demand an incessant watching, and on that account are so inconvenient that to-day they are ignored by almost the totality of practitioners. With young calves the general form of the abdomen, rather regularly cylindrical, lends itself better to their application and they give better results in them. With this method Serres has obtained in three weeks the recovery of a hernia of the abomasum in a three-months-old calf; in twenty days, that of another of the same kind in a steer six or seven months old; and in fifteen days, that of a large intestinal hernia of the left side in a five-year-old cow.

Simple retaining bandages, with cloth or linen, have the same inconveniences as the preceding, except, however, when

by some means they are made to adhere to the skin of the animal. One of the best of these kind is the one described by Bouley, consisting in applying over the hernia, after reduction, a thick coat of chopped oakum, glued with a mixture of black pitch and turpentine melted together.

The reduction of the hernia is not always easy while the animal stands up. However, if it is quiet, and when the lesion, not too large, is situated sufficiently far back to be reached through the rectum, one may be assisted in his manipulations of taxis, if, with one hand introduced through the anus and placed over the hernial orifice, the exit of the abdominal organs is prevented while the retaining bandage is completed. In all other cases it is better to cast the animal; although decubitis is not so favorable for the application of the bandage, but it facilitates considerably the manipulations of reduction. Once the hernia is reduced, with the animal cast or standing, a coat of agglutinative mixture is spread rapidly over the skin, on the spot occupied by the hernial swelling, and on a surface extending much beyond its boundaries; while this coat is still warm a pad of chopped oakum is laid on; then another coat of pitch, and over this a piece of pasteboard, soft but solid, is placed, and also coated with the agglutinative preparation. Finally a linen band, 12 or 15 metres long, and 10 centimetres wide, also covered now and then with the sticking mixture, is rolled carefully around the body of the animal, thus forming an immovable bandage, having great rigidity and being firmly fixed.

If the bandage is applied close to the sheath, it is necessary to place on each side of it small hard rolls of oakum to avoid pressure on the urethra. (Serres.)

Although this contentive bandage is easy to apply, and is excellent in its effects, it is not perfect. It can evidently be better fixed than the bandage with pads, held only by a surcingle, but in summer the adhesive mixture may get soft, and the bandage be displaced by sliding off. To prevent this the pitch mixture can be replaced by hard gelatine glue melted. I have

had recourse to it often and derived good results from it. A plate of pasteboard of a size slightly larger than that of the hernia is glued directly over the skin with several rolls of bandage firmly tight and glued on to the pasteboard, on the skin and in between the layers of bandage. The animal is watched for a while until the glue is cold, and after an hour or two, when it is dried, the bandage is hard and firmly secured.

During the whole treatment the animal shall be kept at rest, to avoid the chances of displacement of the apparatus, and a proper diet to avoid overloading of the digestive apparatus should be recommended.

Applied at the very beginning of the trouble, this method of *fixed bandages of contention* may give good results. They constitute a solid pressure, which holds the hernia reduced during the time necessary for complete cicatrization of the abdominal opening, say one month, six weeks, or two months, according to the case. Yet they do not give the same results in all cases of recent hernia. Very efficacious when it is small, easily reduced, and situated in the superior regions of the flank, and having a small opening, all of which are unfavorable conditions for the return of the hernia, after being reduced—but they will most ordinarily fail, on the contrary, with a large and heavy hernial mass, situated low down, with very large hernial ring, which after reduction are most favorable for another exit of the intestinal loops, which may slip under the bandage, be pressed upon and injured.

In such a case the contentive bandage may, at best and under most favorable conditions, bring on improvement, but it is powerless in promoting final recovery. It is in this way that in case of an enormous hernia of the rumen in a cow seven months pregnant, Larrony was able to have her reach the time for normal delivery, and to obtain a great reduction of the size of the lesion, by the application to the end of gestation of a pitch bandage; it is true that afterwards the hernia still existed, but it was sufficiently reduced to allow a second gestation to go on under conditions entirely normal.

Experience shows also that the recovery of ventral hernias with bandages is much more easy to contain in youth than in adult life. Indeed, in the first periods of life, besides the general form of the abdomen, more favorable, as we have said, to the application of bandages and their final fixidity, the work of cicatrization is much more active and more rapid. The result is that the chances of recovery from ventral hernia by this mode of treatment, quite good in young bovines, rapidly diminish later, and are nearly all gone in advanced years.

Treatment with bandages is then only indicated when the animal is young, carries a recent hernia, of small size, with reduced opening situated on the upper part of the abdomen. In the other cases, failure will be almost certain, and then it is much better to resort at once to the treatment by *operation*, of little danger in bovines, relatively easy to carry out, and much more certain in its efficacy.

At any rate, I consider the *operation* as the method of choice in all cases of hernia, recent or old, and I will never hesitate to operate on all ventral hernias of medium size that come before me. Of course, the owner has to be taken into consideration; if, frightened by the idea of a bloody interference, he hesitates, in cases where the age of the patient, the size and situation of the hernia, and so forth . . . one may try the fixed contentive bandage. But, taking into account the number of failures, much hope cannot be given, and if, after a few weeks, no appreciable improvement is noticed, the operation must be resorted to.

As to the other curative treatments of hernia (irritating frictions, caustics, pressure upon the sac, ligature, etc.) they may have been used only exceptionally, and that in the treatment of acute ventral hernia. However, Delsol has obtained in a cow, in the space of a month, recovery of a right intestinal hernia, existing for four days and as big as a melon, by using friction with 30 grammes of nitric acid, made for five minutes. Marlot, Jr., has also recorded two observations relating to a cow and to a calf affected with right intestinal hernia of recent formation

and œdematous, which he treated by the process of suture applied with the Marlot pincer. These cases are exceptional, and in reality these modes of treatment are only attempted with chronic hernias.

OLD OR CHRONIC HERNIAS.

As long as the origin of a ventral hernia goes back more than three weeks, bandages are useless. "The edges of the hernial opening are covered with a fibrous border, with little vascularity, and unable to form an obturator covering." (Cadiot and Almy). "In those conditions," as Serres wrote, "nothing can be expected from the use of contentive bandages, and it is in vain that in many instances we have employed them." They can only act as palliatives, by preventing the escape of abdominal organs from their normal relations and also in allowing the use of the animal for a variable length of time.

Nevertheless, old ventral hernias may be submitted to a useful treatment and it is wrong to accept in an absolute manner the idea of the incurability of chronic hernia. "To have some chances of success with such lesion," Bouley has said, "the intestine must not have had time to accustom itself to remain outside of the abdomen, and the borders of the opening through the ventral walls time to cicatrize. . . . When some days have already elapsed and the edges of the opening have cicatrized apart from each other, the chances of success are very limited, even when by the application of a bandage, the intestines are prevented from passing through it. . . . Once established, ventral hernia becomes rebellious to treatment, and it is best to leave the animal live with the infirmity rather than to resort to risky operations."

This opinion was too absolute, as in reality it is possible to obtain the recovery of some chronic hernias by a certain number of methods of various efficacity. Irritating or caustic frictions, irritating injections into the hernial sac, suture, ligature, compression with the clamp, etc., are methods which are constantly used in the treatment of chronic ventral hernias in horses. They can also be applied to bovines, and if their use is

much more limited, say even exceptional, it is because the owners consent rarely to have their animals treated, and prefer sending them to the slaughter-house for butchery.

Irritating or blistering frictions (sinapism, ointment of antimony, or the neutral chlorate of potassium) have for object to promote the formation of an œdematous swelling, which reduces the hernia by pressing the organs back into the abdomen, and then forms itself into a closing cicatricial tissue. Employed sometimes with success, in exomphalus of colts, these frictions have given poor results against ventral hernia of bovines, almost all on account of the large size of those lesions and also from the difficulty in promoting the formation of a fibrous pad, obturating and sufficiently wide and resisting.

The same can be said of the *perihernial irritating injections.* First recommended in human medicine, this method consisted at first in the injection of saturated solution of salt between the neck of the hernial sac and the surrounding tissues, with the object of developing a plastic inflammation with fibrous neoformations, with retraction of the tissues, hence obtaining contraction or obliteration of the hernial opening. Later the salt solution was replaced successively by diluted alcohol, decoction of oak bark, artificial serum, and recently by chloride of zinc to the tenth. Tested in veterinary medicine, these injections have given good results only in exomphalus of small size. Ventral hernias in bovines could never be benefited by them, only in the exceptional cases, where the lesion would be of very small dimensions.

Caustic frictions (nitric and sulphuric acids), recommended first by Dayol in the treatment of exomphalus of colts, act in the same way. They have often been employed with success against ventral hernia of all species of animals. In bovines, where old hernias are ordinarily large, the number of complete recoveries by this method is rather limited, always on account of the difficulty presented in cases with wide hernial opening. Gouse has recorded a final recovery obtained in three weeks

with a left ventral hernia treated with one friction of 16 grammes of nitric acid.

Besides, this method is dangerous, and requires close watching every instant. There is danger of premature and accidental sloughing of the eschar, and also serious accidents, such as eventration, formation of artificial anus, peritonitis, etc., accidents which are so much more to be feared when the hernia is large, requiring more energetic interference. The method cannot be recommended.

Compression with clamp, ligature, or suture of the hernial sac, after reduction of the hernia, have for effect to promote a rapid mortification of the sac while on the opening a closing fibrous pad is organizing. Numerous *modus operandi* pertain to this surgical method. They have all been frequently employed, with more or less satisfactory results, in the treatment of most varieties of hernias in horses, especially in cases of omphalocele. Against ventral hernia of cattle they have, on the contrary, been seldom used, on account of the ordinary large size of the lesion, they have proven as unsatisfactory as the preceding methods, and on that account are not to be recommended. I will not speak of them, but merely mention the principal ones.

Ligature is the simplest method of all. It consists in running through the sac, after reduction of the hernia, two metallic pins, disposed cross-like, and applying above them a loop of cord, tightened sufficiently strong to promote a slow mortification of the sac.

Suture is made, after reduction, by using the plate of Mangol, the nippers of Benard or of Marlot, so as to make it more regular. With this method Marlot, Jr., has obtained the radical and rapid cure of ventral hernias in several bovines; he has also observed that in these varieties of hernia reduction was easier to obtain and the application of the suture made with much less difficulty when the animal was kept standing instead of being cast.

Compression of the sac, always after complete reduction,

can be made with straight or curved clamps or with special nippers. Degive has recently described a new *modus operandi* in which to the compression is added the suture of the hernial ring. The hernial sack being opened with all necessary care, the protruding organ being reduced, one or two metallic needles are passed through the skin and the edges of the hernial opening; above that a hernial nippers is applied, the needles are withdrawn, and the nippers kept in place by horse-shoe nails implanted under them, through the skin and the edges of the hernial ring; two cords secured together on the back of the animal support the weight of the nippers. For Degive this method is superior to any in cases of large ventral hernia with wide hernial ring. It can be resorted to in all domestic animals.

(To be concluded in the June REVIEW.*)*

THE CHICAGO VETERINARY COLLEGE has 308 matriculants for the session of 1905-06, and graduated 98 at the March examinations. The Kansas City Veterinary College had 302 students enrolled, with 78 graduates.

A BILL framed to abolish the sale of broken-down horses has been passed by the Massachusetts legislature and signed by the Governor. Particulars are not at hand stating who is to be authorized to say when a horse is broken-down or what is to be done with horses so declared.

THE ANTI-DOCKING BILL has passed the New York Assembly and advanced to a third reading in the Senate. It seems that this year no protests have been filed at Albany either by the dealers or private owners. In all its provisions it is substantially a copy of the Colorado law, which has been in force since 1899. It provides for the registration of all docked horses in the State within one year, and makes the mere possession of an unregistered docked horse after the expiration of that time a misdemeanor punishable by fine or imprisonment, or both. By many horsemen it is deemed to be impossible of enforcement, and by some lawyers it is said to be unconstitutional. That its enactment into law would be a serious blow to the trade in fine carriage horses of the fashionable type is believed by nearly all dealers. In other years the mere introduction of the bill, says the New York *Herald*, has been the signal for a mild panic in the horse market, but for some reason it has not occasioned a ripple of excitement this season.

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ACTINOMYCOSIS MISTAKEN FOR TUBERCULOSIS AT POST-MORTEM FOLLOWING THE TUBERCULIN TEST.

By Veranus A. Moore, New York State Veterinary College, Ithaca, N. Y.

The long and successful use of tuberculin in the diagnosis of tuberculosis has shown that it is one of the most accurate diagnostic agents known to veterinary science. There are, however, those who still feel that it is not to be trusted. The recognized exceptions, such as cases far advanced in the disease and those where there is an arrest in the disease process with a tendency to encapsulate the lesions, are used as arguments against the efficiency of tuberculin as a diagnostic agent. Again, to prove that tuberculin is not as reliable as it is generally accepted to be, its opponents cite cases where it is alleged to have failed to produce a reaction and yet the animal was suffering with active tuberculosis. A number of such cases have come to my notice and in every instance the error has been in the diagnosis of the disease and not in the action of the tuberculin. Recently a case of this kind was investigated in which an actinomycotic growth was mistaken for a tuberculous one. The possible confusion in the differential diagnosis between these two diseases, when the lesions are restricted to the lungs, renders this case worthy of note..

A herd of cattle consisting of about 100 cows was officially tested by a representative of the State Department of Agriculture. Five animals gave a decided reaction and upon post-mortem examination they were found to be tuberculous.

Shortly after the test was made, one of the old cows that did *not* react to the tuberculin was slaughtered because she was not "doing well." Upon examination it was found that one of her lungs was badly diseased. It was promptly reported that the tuberculin test had failed, because the disease was not sufficiently advanced to attribute the failure to the existence of extensive lesions. It happened to be my good fortune to examine this case before the affected lung was destroyed.

The lesions were located in the anterior part of the principal lobe of the right lung. They consisted of one large mass of dark (pigmented), spongy-like tissue about eight inches in diameter, surrounded by a sharply defined fibrous wall (Fig. 1). There were several smaller masses, from one to two inches in diameter, of a similar growth in the adjacent lung tissue. A close examination showed the tissue to be that of *Actinomycosis*. In one side of the larger actinomycotic growth, there were two or three small pockets containing pus. In a thin layer on the blade

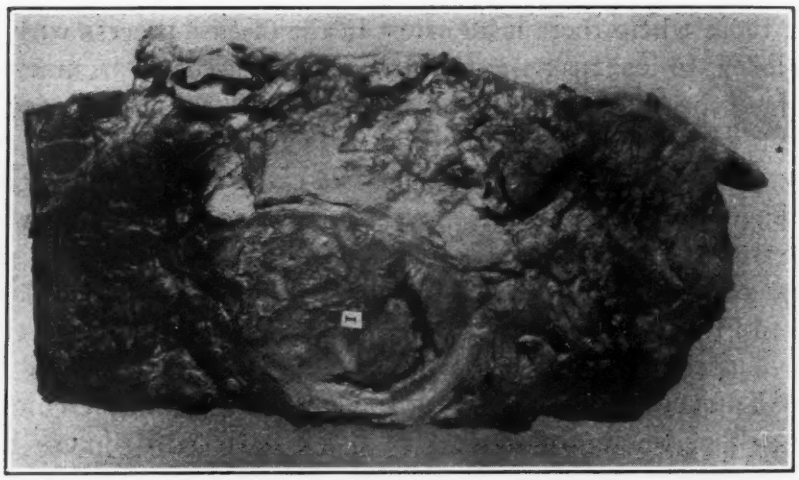


FIG. 1. A photograph of a section of the lung through a small actinomycotic area. (1) Actinomycotic tissue, (2) the wall of fibrous tissue separating the diseased focus from the normal lung tissue.

of a knife, the pus exhibited minute yellowish clumps that could be seen with the unaided eye and with a hand lens their character could be determined. The tissue itself was thickly studded with the clumps of the ray fungus. Sections of the new growth contained areas thickly sprinkled with the fungus as shown in Fig. 2. A higher magnification of one of these masses shows the fungus growth with surrounding giant cells.

The fact that actinomycosis is not a very common cause of lesions in the lungs may warrant a somewhat detailed description of actinomycosis, more especially in the lungs of cattle.

Actinomycosis may attack any organ of the body. It is

more commonly found about the head, tongue or jaw, but not infrequently it occurs in the lungs, liver, spleen, intestine and uterus. In fact, all organs and tissues seem to be susceptible, and, like tuberculosis, actinomycosis may become generalized. Assmann considers generalized actinomycosis to be more common than is generally supposed. He gives a description of eleven such cases. Thus we see that "lumpy jaw" and "wooden tongue" do not circumscribe the range of activities of the ray fungus.

In actinomycosis of the lung the infected tissue presents, in its early stages, a very characteristic appearance. The lesions do not consist of necrotic lung tissue, as in tuberculosis, so much

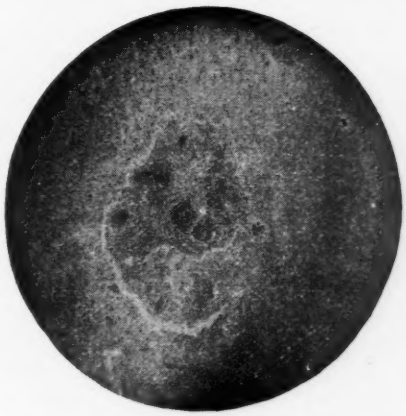


FIG. 2. A photograph of a section of the actinomycotic tissue showing several clumps of the ray fungus.

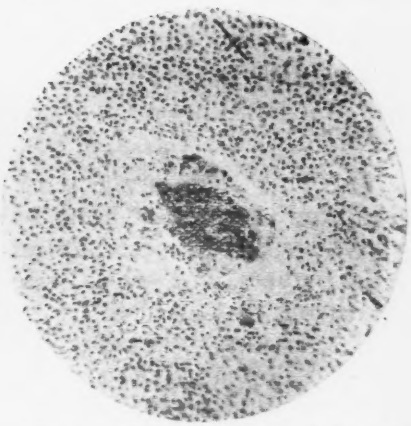


FIG. 3.—A photograph under higher magnification of one of the clumps of the ray fungus. It shows the fungus mass with a few of the club ends radiating from it, the giant cells surrounding it and the new formed tissue farther from the fungus.

as a mass of tissue composed of clumps of the ray fungus surrounded by tissue composed for the greater part of epithelioid and spindle-shaped connective tissue cells, among which giant cells may appear. This replaces the lung tissue. The ray fungus is very frequently surrounded by a zone of giant cells. As the new formed cells increase in number, they press against the tissue surrounding them. The new formed actinomycotic tissue has ordinarily a glistening appearance. It is often covered with a gray muco-purulent substance which gives it the

appearance of dead tissue. To the touch, when one attempts to pick it out, it gives the sensation of a wet, rubber sponge. It is not removable except by tearing or cutting it away. There is usually a firm and quite thick fibrous capsule surrounding it. Miliary actinomycoses have been described. This is quite rare and consists of minute yellowish nodules that often become calcarious. Occasionally the actinomycotic tissue becomes firm, resembling the fibrous tissue of scirrhous cord. In these cases the diagnosis is made by finding the ray fungus in little pockets filled with the characteristic actinomycotic new growth. In the usual form, the muco-purulent substance contains small yellowish granules that are readily detected, in thin layers, with the unaided eye. In the growing actinomycotic tissue they are readily found as illustrated in the case described. If these few facts relative to this disease will be kept in mind, unfortunate errors in the differential diagnosis will be avoided.

DR. D. F. LUCKEY, State Veterinarian of Missouri, is having a number of the best herds of the State carefully examined for tuberculosis. These examinations are made upon solicitation of the owners, who are realizing the importance of freeing their herds from this disease.

AN AMERICAN ELEPHANT RANCH.—*Pasadena, Cal., April 16.*—An elephant ranch in South Pasadena is to be established soon. The purpose of several capitalists is to breed the animals for circuses and shows. [How large an acreage will it require to feed the animals and how many female elephants will it require to make this enterprise profitable, with such slow results?—(L. E. WILLYOUNG.)]

THE American Saddle-Horse Breeders' Association has tendered to the National Horse-Show Association a special prize of $500 for an exhibition of registered saddle-bred horses at Madison Square Garden next fall. One of the conditions is that the judge must be an American saddle-horse expert. The imported English dealer judge, who has held exclusive sway at the national show for three or four years, is becoming very unpopular with American breeders, since the type of horse that has been most esteemed in this country is unrecognized by him, if the English type is in the class, however poor a specimen the latter may be.

EMPYEMA OF THE FACIAL SINUSES OF THE HORSE.

By W. L. Williams, Professor of Surgery, New York State Veterinary College, Ithaca, N. Y.

A Paper presented to the New York State Veterinary Medical Society, September, 1905.

Under the title of empyema of the facial sinuses we desire to include all collections of pus in the frontal, maxillary and turbinated cavities because of their community of origin and symptoms.

In general, empyema of the sinuses expresses itself by a fœtid nasal discharge from the affected side or sides, bulging of the face over the affected region, dullness upon percussion over the area filled with pus and dyspnœa in such cases as cause a displacement of the turbinated bones towards the septum nasi. These symptoms are subject to various modifications according to location, cause and extent of the empyema.

The causes are exceedingly varied but such a vast majority of them fall within two great classes, dental affections and malignant tumors, that we are generally warranted in suspecting one of these two unless there are data to indicate otherwise. Among 23 cases of empyema selected from our clinic, 16 were traced to pathologic conditions of the teeth, 5 to malignant tumors and the cause of 2 was undetermined.

Aside from these two most common causes, empyema may result from fractures of the bony walls of the sinuses with chronic infection and necrosis of tissues, or from the entrance into the sinuses of foreign bodies either from the nostril through the normal communication shown opposite N in Figs. 1 and 2, Plate I, or otherwise. It is further alleged, without direct proof so far as we have been able to learn, that catarrhal inflammations of the nasal mucosa extend by continuity, through the normal avenue of communication, into the sinuses and there intensify to such a degree as to cause the formation of an amount of pus which can neither be absorbed nor escape through the communicating passage into the nostril. It has been claimed that glanders has thus extended into the sinuses and caused

empyema of them, but the claim apparently dates back prior to our knowledge of the bacillus malleus or of mallein as a diagnostic agent. It is highly probable that most cases of empyema of the sinuses attributed to glanders are errors in diagnosis. It is quite common to meet with cases of empyema of the sinuses in colts of one to three years in which the owner alleges that it has followed strangles, but with an extensive opportunity for investigating the question in a practice where this class of cases were very common it was found that the allegation of strangles was based upon the occurrence of extreme dyspnœa prior to the nasal discharge, but there had been no formation of abscesses in the lymphatic glands and no history of strangles at the time among non-immune associates. Such a history was wholly in harmony with the ordinary course of simple follicular odontomes undergoing purulent destruction. We have had no reason to believe that strangles ever results in empyema of the sinuses.

The allegation that other forms of catarrhal inflammation of the nasal passages extend by continuity into the sinuses and cause empyema apparently rest upon equally vague data.

The passage of food particles into the sinuses during vomition, or in the return of food through the nostrils as a result of pharyngeal paralysis or other serious disturbance to deglutition has been clearly verified by finding the food therein upon post-mortem examination, and similar cases have occurred where a horse in being strangled in muddy water, has, during forced respiration, driven sand and mud into the sinuses.

The proportion of cases referable to dental affections and to malignant growths will vary with the age of the animals. Our clinic draws its cases largely from a region in which very little horse breeding is done and a vast majority of cases entering are adult or aged. In a breeding district the ratio of dental disease to malignant new growths is very much greater. Most cases of empyema of the sinuses occur while the animal is young, but some varieties of dental affections occur only in the very aged; malignant tumors are almost constantly confined to the aged.

Of the 16 of our cases traced to dental disease, 13 were due to aberrations of, or defects in their development, so that the foundation for the empyema was laid prior to the eruption of the offending organ. While in some of these cases the development of the empyema was deferred till adult age, by far the greater number occurred during early life, from the second to the fifth year.

The diagnosis of empyema of the facial sinuses usually offers little difficulty but the differential diagnosis as based upon the varying causes, and to serve as a basis for prognosis and method of handling may call for much higher skill.

The nasal discharge of empyema of the sinuses is almost always very fœtid but in some cases due to undetermined causes the fœtor may be very slight or unrecognizable. So far as our observations have gone empyema due to dental disease or malignant new growths is always quite fœtid. In cases of dental origin there is a characteristic odor due to the infection having proceeded from the mouth and increases in intensity and repugnance as the amount of food in the sinuses. It is virtually the odor of decaying food particles, in a suppurating mass, largely gaining its infection from the oral cavity.

The fœtor from empyema due to a malignant tumor may be quite as great but usually differs in character, resembling more the odor of animal tissues which are rapidly breaking down.

The nasal discharge is usually unilateral but in one of our 23 cases the discharge was bilateral and symmetrical due to simultaneous disease of the first molar in each superior arcade.

The quantity of nasal discharge varies greatly in different cases and at different times in the same case. It is almost always constant but in some instances is remittent. It varies also in consistency, is frequently quite thin, partly attributable to the fact that the solid constituents tend to become precipitated and remain in the cavities as inspissated pus. The discharge is more or less viscid and adheres somewhat to the nostrils. It is frequently flocculent in character, and varies greatly in color, at times being tinted by the coloring matter or particles of food.

Facial bulging is strongly suggestive of empyema but not conclusive. It is usually more marked in young animals with soft bones, while in aged horses it may be almost wholly absent. In malignant tumors the bulging is usually very marked as soon as the tumor is well advanced. The bulging is partly dependent upon the inter-sinusal pressure but very largely due to the inflammatory processes at work in the bones themselves. The pressure of pus within the sinuses can not be very great usually because it promptly breaks its way through the inner wall of the various sinuses, constituted of the thin, semi-cartilaginous turbinated bones, and thereby escapes into the nasal passage The avenue of escape of the pus from the sinuses into the nasal passage is by some supposed to be through the normal communication between these cavities as shown beyond the dotted lines from N in Figs. 1 and 2 in Plate I, but a study of these figures will show clearly that a filling of the sinuses with any substance will close the communication firmly, its borders acting as valves and preventing exit. If we examine Plate II, we note a food mass, F, in the maxillary sinus which extends upwards into the frontal sinus at F′ where it breaks through the superior turbinated bone into the nasal passage. A similar condition is noted at B, in Plate III, where pus and food find an exit into the nasal passages from the inferior maxillary sinus through the internal wall of the inferior turbine. Such exits naturally prevent great bulging from pressure from within so long as the contents are of a character that may thus escape, but in cases of malignant growths as shown in Plate V, where the sinuses are mainly occupied by the neoplasm and contain but a small quantity of pus the pressure from within may have a very important influence in determining the amount of facial bulging.

The principal causes of facial bulging other than empyema are cystic and other odontomes, cystic lachrymal duct, osseous and other benign neoplasms and osteoporosis. The lachrymal cysts are largely in the region of the lachrymal bone, the cystic odontomes may vary in location; but they are each differentiated from pus and solid neoplasms by the fact that they

PLATE I.

Fig. 1. Transverse section of the right half of the face of an adult horse just behind the last molar, viewed from the front.

F, frontal sinus; N, nasal sinus opposite its communication with the superior maxillary sinus, SM; IM, the posterior wall of the lateral chamber of the inferior maxillary sinus; IM′, median portion of the inferior maxillary sinus; NF, conduit of the super-maxillary portion of the trifacial nerve; M^3, a small segment of the posterior fang of the third molar.

Fig. 2. Transverse section of the left half of the face of the same animal between the second and third molars. S, sound in the lachrymal duct. Between S and N are seen the communications between the frontal and inferior maxillary sinuses and the nasal cavity. SM, antero-inferior wall of the superior maxillary sinus. Other lettering same as Fig. 1.

PLATE I.

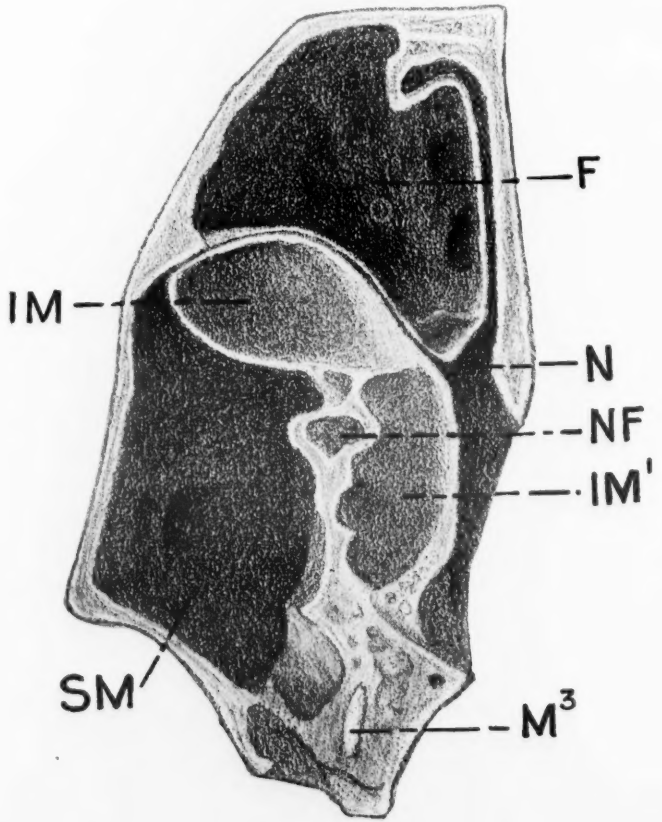


FIG. I

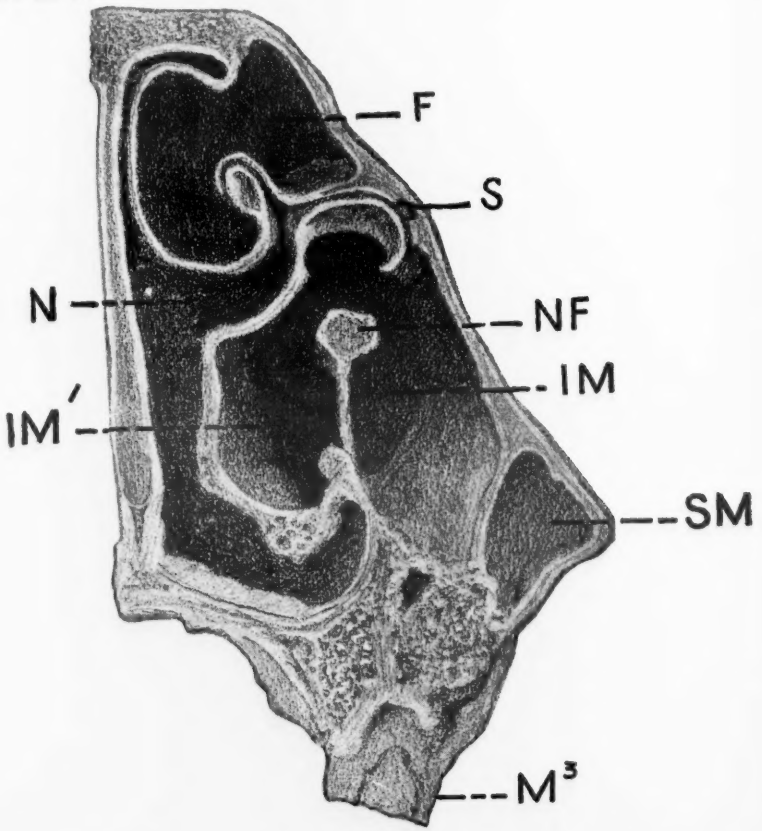


FIG. II.

PLATE II.

Cross section of aged horse in front of 2d molar showing food masses in sinuses. The other portion of this specimen is shown in Fig. 1 of Plate IV.

ST, superior turbinated bone, forming the median wall of the frontal sinus, impacted with food masses, F′, and showing an opening through which the food masses escaped into the nasal sinuses; S . . . S, sound passing from the food mass, F, in the superior maxillary sinus through its communication with the frontal to the smaller food mass, F′; NT, trifacial nerve; IT, inferior turbinated bone; M_2, second molar.

PLATE II.

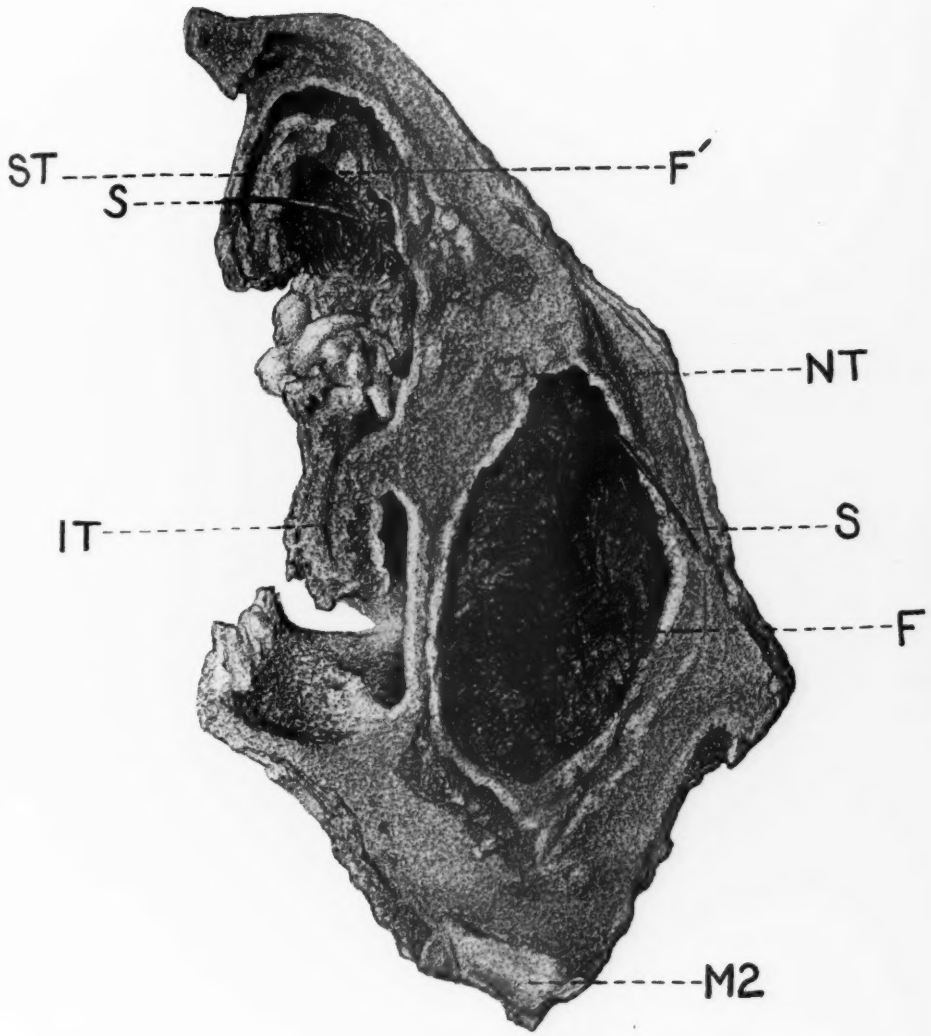


PLATE III.

Left half of the anterior portion of the superior maxilla of an aged horse showing inter-dental alveolar periostitis with fistula extending from the alveolus of the second molar into the maxillary sinus, causing empyema with eventual discharge of pus into the nasal chamber through the inferior turbinated bone.

Fig. 1. A, necrotic cavities resulting from impaction of food between the teeth; a larger excavation is seen just in front of the third molar, M^3; S, sound passing through alveolar fistula from the alveolus of the second molar, removed, into the maxillary sinus; B, pathologic communication between the inferior maxillary sinus and nasal cavity after traversing the superior compartment of the turbine and its median wall. The opening is nasalwards from the antero-inferior wall of the inferior maxillary sinus.

Fig. 2. The palatine surface of the same specimen looking directly upon the grinding surface of the teeth. The second molar has been removed to expose the fistula from the alveolus into the sinus, through which a sound, S, is inserted. The spaces between the second and third premolars and between the third premolar and the first molar are visible. The teeth themselves are free from disease, the pulp cavities obliterated by age.

PLATE III.

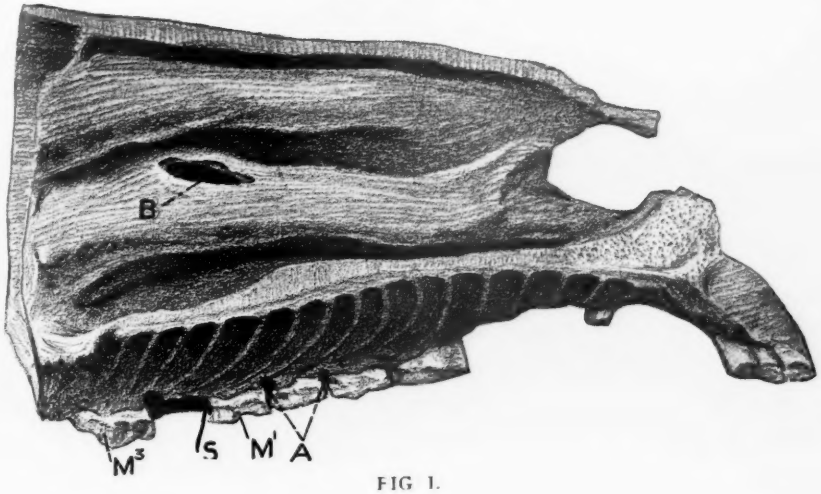


FIG. I.

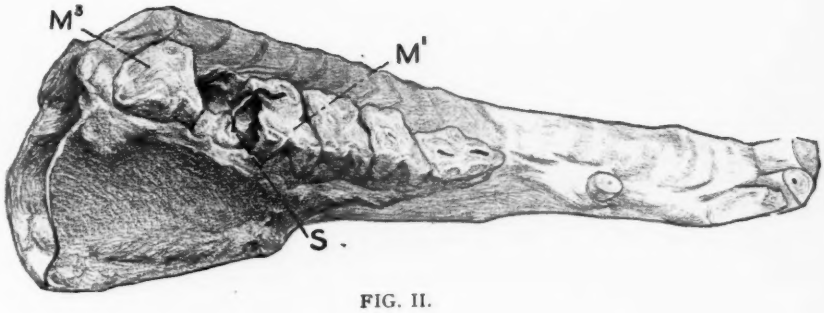


FIG. II.

172.

PLATE IV.

Fig. 1. Portion of same specimen as Plate II, looking directly upon the grinding surface of the teeth. S . . . S, sound passing through the first molar, M1, into the maxillary sinus, leading to enormous impactions of food masses at F, and F′. Other letters correspond to Plate II.

Fig. 2. Sagittal section through two grinders, showing mechanical arrangement to prevent the impaction of food between them, viewed from the lateral side. S, sinus; PP, pulp cavity; C, external cement; C′, infundibular cement; Er, erosion extending from the defective C′ towards the pulp cavity; E″, contiguous enamel plates standing above the dentine in a manner to deflect food particles from the line of division between the two members and prevent its impaction between them. The two organs approach each other at their crowns, forming a truncated cone of movable sections, or an arch in two sections, which close tightly at the apex when pressure is applied in the process of closing the jaws.

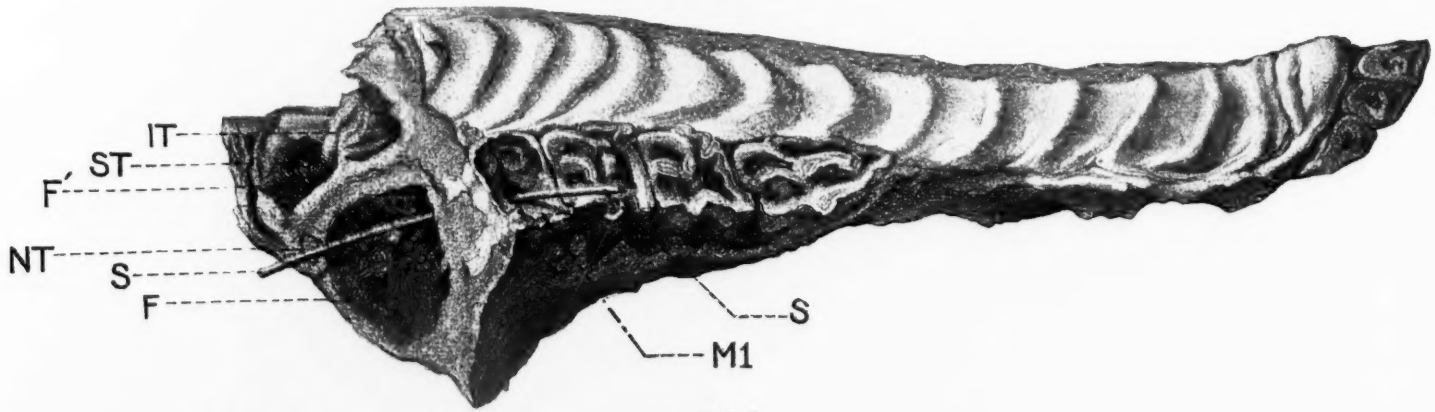
Fig. 3. Transverse section through the long axis of the first superior premolar showing failure of the infundibular cement.

C, external cement; C′, infundibular cement area devoid of cement substance and lined directly by the infundibular enamel E′, and showing an extensive erosion at Er, caused by decomposing food particles and finally opening into the adjacent turbinated cavity through Er′.

Fig. 4. Transverse section of an equine grinder. C, external cement layer; C′, infundibular cement layer; E, external enamel; E′ infundibular enamel; P, pulp cavity.

Fig. 5. Table surface of Fig. 3 with corresponding lettering.

PLATE IV.



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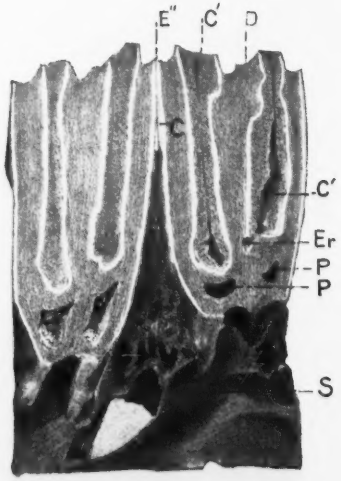

FIG. II.

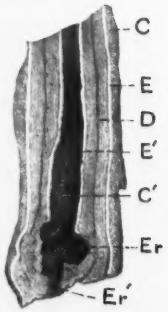

FIG. III.

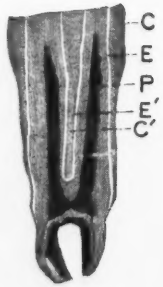

FIG. IV.

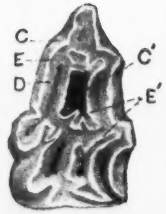

FIG. V.

PLATE V.

Malignant tumors involving the facial sinuses and causing empyema.

Fig. 1. Palatine view of three cases of malignant neoplasm. A. 1, portion of tumor on lateral side of dental arcade; 2, extent of tumor on the median or palatine side of the arcade. B. 3, a small pedunculated portion of the tumor projecting into the nasal cavity; 4, a necrotic cavity in the palate containing food particles which had been forced in between the teeth and tumor and pushed up to this point; the dotted line of 4 passes over a prominent, spheroidal enlargement of the tumor; 5, an area over which the buccal mucosa remains intact to be succeeded by another denuded area, 6. C. 7, tumor on the median side of the dental arcade; 8, tumor showing through the zygoma; 9, portion of tumor on lateral side of dental arcade.

Fig. 2. Sagittal view of the specimens shown in Fig. 1. A. 1, outline of body of tumor filling the posterior nares and nasal cavity; 2, palatine portion; 3, portion of tumor extending along the superior surface of the bony palate; 4, spheroidal tumor; 5, adhesion between the palate and inferior turbine; 6, intact buccal mucosa, below which is shown another denuded area 7; 8, 9, tumors invading respectively the superior and inferior turbinated cavities in E and C.

C. 10, mass of inspissated pus in inferior turbine; 11, tumor on median side of dental arcade.

PLATE V.

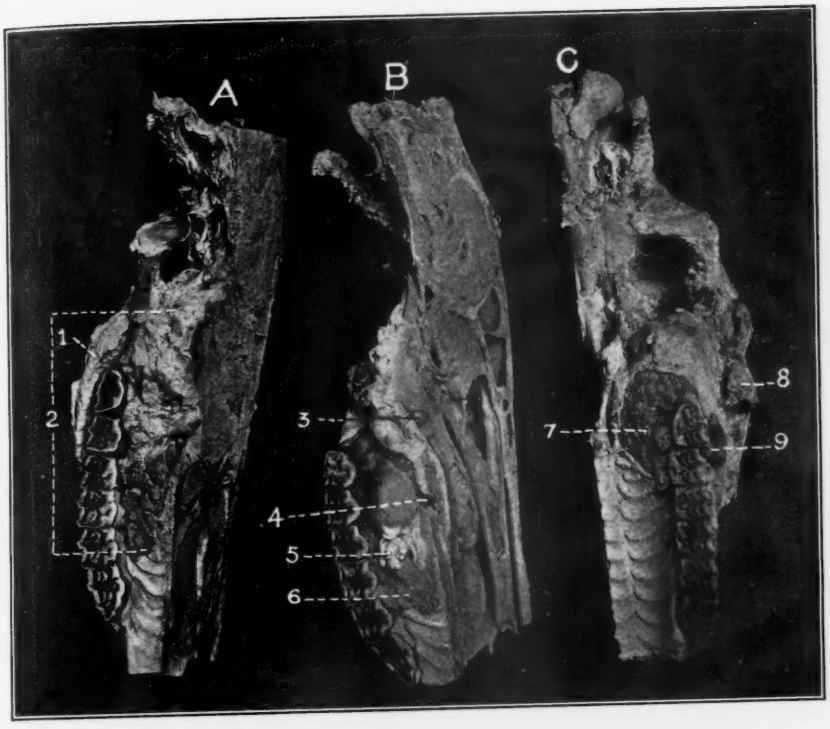

FIG. I.

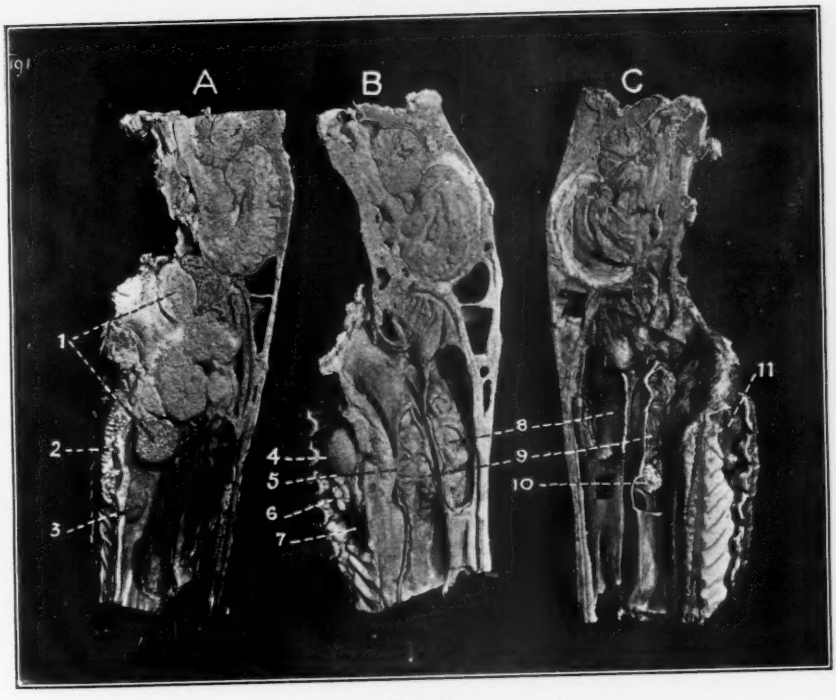

FIG. II

cause *increased* resonance. The bulging of osteo-porosis offers little difficulty in differentiation, from the fact that it is usually symmetrical and supported by other symptoms while empyema is almost always unilateral. While in osteo-porosis and cystic odontomes there may be nasal discharge it differs from that of empyema in being essentially a mucoid excretion resulting from forced respiration through a narrowed air passage. It consequently resembles much in appearance the nasal discharge of heaves. It is not fœtid.

Percussion over the sinus affected with empyema reveals dullness over the entire area occupied by pus. Soft tissues, like in malignant tumors, produce a like dullness, as does also any solid or semi-solid body. Dullness over the sinuses is likewise caused by any marked thickening of the soft tissues covering the bone. Dullness is a relative term and the technic of percussion needs be carefully applied. We determine the question of dullness largely by a comparative percussion of the sound and healthy sides, or by percussing the sinuses of a diseased animal and comparing with a healthy one. This cannot be very safely done in the stall, since if one side of the face bears a different relation to a resonant wall from the opposite one, there will occur a confusing variation in resonance between two normal sinuses. This may be largely overcome by changing the position of the head, in relation to the surrounding walls, repeatedly during our examination.

We recognize three grades of resonance in percussing the sinuses: increased, normal and decreased. Writers on surgery generally mention but two conditions: normal and decreased resonance, but our clinical records show three cases of distinct increase, while in previous experience among large numbers of colts this condition was not at all rare. Whenever a cyst, distended with lymph or serum, occupies one of the facial sinuses it becomes increasingly resonant. They almost always are of dental origin and consist usually of simple follicular cysts or compound follicular odontomes. In one case we met with a bulging over the area of the lachrymal bone in an aged horse

which we diagnosed as a cystic dilation of the lachrymal duct. Possibly other cases of inter-sinusal cysts are of a like character, but in all cases the cyst, filled with lymph or tears, is to be constantly differentiated from empyema by *increased* resonance. In our first case of follicular cyst, in comparing the two sides of the face, we trephined the *less resonant*, in spite of the bulging on the other side, found a *normal* sinus and later trephined the opposite side and removed a large cyst. Curiously enough, after an extended experience with these cases the last one to enter our clinic was sent us by a practitioner with the remark that we would need trephine upon the *comparatively dull* but *really normal* side. In percussing the sinuses we consequently need select a sound sinus as a basis for comparison. Assured of a normally resonant sinus as a basis for comparison, a dull area indicates the occupation of a part or all of the sinus by pus or other non-resonant substance, or of an important thickening of the soft tissues covering the bone or a thickening of the bony walls themselves.

Tenderness over the empyemic sinus is sometimes very evident, the patient showing signs of pain upon percussion over the affected area. The determination of the cause of a case of empyema is more important and difficult than the diagnosis of its presence, since upon the correct interpretation of its etiology must be based our prognosis and handling.

Empyema of the sinuses of dental origin in colts from a few months to two and rarely three years of age is quite generally due to the purulent breaking down of a follicular cyst or of a compound follicular odontome, or they arise from the projection into the sinuses of large masses of solid dental tissues which by their volume and position cause pressure necrosis of the soft parts. The simple follicular cyst is responsible for a large majority of the cases of empyema in one and two year old colts, usually following a period of severe dyspnœa, loosely referred to as strangles by the owner.

This class of cases are largely attributable to accessory tooth germs, which develop in the sinuses only and do not show them-

selves by any abnormality discoverable in the oral cavity. This want of evidence in the mouth heightens the tendency to falsely attribute them to strangles.

Another important class of cases of empyema of dental origin are referable to an arrest of development of teeth normally located in the alveoli and which were apparently normal or approximately so in their early stages of development. These have their foundation prior to the eruption of the tooth and usually develop their symptoms when the animal is from three to six years old, though they may be delayed until a later date in life. The arrest in development usually occurs at one of two points; either there is a defect in the central infundibulum of cement or the two contiguous dentinal plates fail to fuse. This is illustrated in Figs. 2, 3, 4 and 5 of Plate IV.

In Fig. 2 at C′ is shown the central cement tract, which is defective, and in the one at the right there is a large, eroded cavity, from which the necrosis has extended at Er into the dentine and nearly into the pulp cavity. In Fig. 3 there has apparently never been any infundibular cement, C′, but simply a cavity instead into which food particles with bacteria entered and finally produced a large erosion cavity, Er, which extended in every direction, through enamel and dentine and eventually at Er′ into the pulp cavity, inducing purulent pulpitis, the pus from which, moving in the direction of the least resistance, would in a molar most likely escape into the sinus and produce empyema.

In the other form, an examination of Fig. 4 will show that the two dentinal plates bounding the pulp cavity, P, on either side, are normally fused at the tooth crown, but when an arrest in fusion occurs, as is not infrequent, then the prolongation of the pulp cavity, P, is opened by wear and infection of the pulp follows.

These two processes are essentially different in character. In the former the infection of the pulp occurs through an erosion which destroys and penetrates layers of enamel and dentine, is a slow process which may require years for its accomplish-

ment: the other is unassociatad with disease of the dentinal tissues and consists in an exposure and suppuration of the pulp as the result of attrition. Naturally the latter occurs generally in younger animals than the former.

Once purulent pulpitis is established the pus finds exit in the direction of least resistance. The infection having entered through the long axis of the tooth with the opening at the table surface impacted with food particles, the pus can not usually find exit in this direction. It may find its way through the alveolus alongside the tooth into the mouth; if a molar it will probably escape into the sinuses, causing empyema; in the premolars it may escape upon the face externally, into the nasal chamber direct, or into the turbines and later into the nasal passages. The changes in the tooth crowns in these cases are not uniformly of a detectable character while still in their position in the alveoli. The small opening at E′ of Fig. 5, Plate IV, may be seen in a premolar, as in this illustration, but this is an unusually large orifice and even it could not well be detected in a molar. When the infection of the pulp is due to non-fusion of the dentinal plates the opening on the table of the tooth is usually far more minute than in the former and consists generally of an almost invisible slit through which it is difficult to pass a wire as large as a horsehair.

Two conditions frequently help in our diagnosis of these cases. If in a case of empyema we can find alongside of a tooth, whose fangs project into the sinus, a separation of the gums from the side of the tooth we may feel assured that we have found the offending tooth. In other cases we find the molar split in two or more pieces, which also indicates that the empyema is dental in origin and that the split molar is the offending member. The splitting is antero-posteriorly and occurs either through the central cement area, E′ in Figs. 2, 3, 4 and 5 of Plate IV, or between the two dentinal plates at D. Some authors assert that teeth become fractured by biting upon hard substances, such as pebbles, but I have not been able to see a case of splitting except as a result of diminished resistance be-

cause of the arrest in development in the dentinal plates or infundibular cement areas.

Other conditions may be present which will indicate that the empyema is of dental genesis. In some cases the tooth has become loosened in its alveolus, dropped out and left behind a communication into the sinus through which food passes, in others we have found the tooth, along with food masses, pushed up into the sinuses.

It is not always possible to promptly identify the offending tooth nor to verify our opinion that the case is of dental origin. This is well illustrated by No. 4418 of our clinic, wherein a four-year-old mare was presented with empyema of the inferior maxillary sinus on February 6, 1900. A diagnosis of dental origin was made, but the identification of the affected tooth could not be made by examination of the tooth crowns, nor could any definite information be gleaned after trephining and removing the accumulated pus.

She was reëntered on October 9, of the same year, trephined, the diseased tooth not identified, the discharge largely ceased, the fœtor continued to some extent, there was no facial bulging.

She was entered a third time on March 2, 1903, with marked bulging of the face, very fœtid nasal discharge, emaciation, quidding of food, first superior molar on the affected side split into numerous fragments. The offending tooth having been identified, complete and permanent recovery promptly followed our handling.

In many of these cases when the examination of the tooth crowns fails to determine the cause of the empyema or to identify the offending tooth, we may obtain definite evidence after trephining by digital exploration of the sinus, and identifying therein the naked, necrotic tooth fang. In those cases where the lateral fangs are affected this is comparatively easy as a rule, but when the necrosis is of the median fangs it is difficult to reach, as the communication between the tooth and sinus is on the median side of the nerve conduit, in the median compartment of the sinus, IM′, Figs. 1 and 2, Plate I. If the ne-

crosis involves the median fang of a premolar the escape of pus being through the turbine or directly into the nasal cavity, it is very difficult to discover the naked, necrotic portion.

The grinders do not all suffer from purulent pulpitis with like frequency, hence a study of the tendency of a certain tooth in the arcade to become affected may aid us in our search by permitting a concentration of our efforts. In our cases with 16 traceable to dental origin, 13 were due to an arrest in the development of the tooth tissues, and among these were 8 cases of the first molar, 2 of the second molar and 3 of the premolars. The 3 premolars caused empyema in the turbines while the first and second molars affected the maxillary sinuses.

A third, and somewhat numerous, class of empyema due to dental origin is found in aged animals when the teeth are worn out. As the crowns of the teeth are worn away by attrition the fangs are gradually pushed out of the alveoli, the pulp cavity becomes obliterated, the central infundibulum disappears, the enamel becomes exhausted, the tooth remnant decreases in its antero-posterior diameter and is narrower at the gums than upon the wearing surface, permitting and inviting the lodgement and decomposition of food between them, leading ultimately to an alveolar periostitis, which, following along between the tooth and alveolar wall, finally pierces the adjacent sinus, admits food into it and establishes empyema.

Authors loosely state that even in young horses, alveolar periostitis arises from such lodgement of food between the teeth and its decay, or by food being pushed into the alveolus alongside the tooth, ultimately reaching the pulp, inducing pulpitis and finally causing empyema by escaping into the sinuses. There are no data known to the writer to support this contention, and in all our cases, and all specimens we have been able to examine, pulpitis is uniformly a result of an infection which has reached the pulp through the tooth crown, traversing either the unsealed fissure between the two dentinal plates or through the central cement area. There is scant opportunity for food particles to insinuate themselves between the gums and shaft of the

tooth, and if they did so and bore ordinary germs of wound infection, an early suppuration would probably throw off the foreign body or even did it extend deeply into the alveolus it would not likely invade the highly vascular tooth pulp, but be deflected into less active tissues. In cattle we find an infection invading the alveolus from the buccal cavity in the one affection of actinomycosis, but here the dental pulp rarely, if ever, suffers, though the teeth become loosened in their alveoli.

If we examine Fig. 2, Plate IV, we will observe that the contiguous teeth are divergent at their fangs and convergent at their crowns. This arrangement pervades the entire arcade and converts it into a truncated cone of six movable sections with the fangs as a base. When the jaws are forcibly closed, the same pressure forces the crowns against each other so firmly as to preclude the possibility of food particles being impacted between them. In addition to this provision it will be noted at E″, that no cement exists between the two grinding surfaces at the top, the enamel being in immediate contact, and on the table surface these plates stand up, cone-like, above the adjacent dentine, dividing the food as a knife would and forcing the particles aside. Taking these two factors, in conjunction with the practically uniform absence of food particles between the teeth in young horses, makes it exceedingly improbable that alveolar periostitis so arises until the animal is quite aged. Comparing Plate III, from an aged horse, we see at A in Fig. 1, interdental cavities in the alveoli which have resulted from the decomposition of impacted food; further back, a yet larger cavity is noted on the palatine border of the alveolus of the second molar, which has been removed. As a result of this decomposition of food particles the erosion has made its way alongside the tooth fang into the inferior maxillary sinus as indicated by the sound in both figures. This form of empyema is not rare in the aged. Probably far more rare is the allied form of empyema as illustrated in Plate II and in Plate IV, Fig. 1. In this case the first molar is worn away except a mere vestige, in the centre of which occurs an opening, possibly suggesting an

originally defective cement area; through this food has become impacted, the tissues have eroded away, the food entered the inferior maxillary sinus, destroyed the partition between it and the superior, escaped upwards into the frontal at F′ and destroying its median wall escaped into the nasal sinus.

The age of the animal, the worn-out teeth, the impacted food between them, perhaps the discharge of the food particles or its coloring matter with the pus from the nostrils usually serve well to diagnose the origin of this form of empyema without trephining into the food-impacted sinuses.

The 5 cases of empyema of the sinuses due to the presence of malignant neoplasms in the sinuses, which we have included in our statistics, all originated in the dental alveoli. The teeth are normal but loosened in their alveoli, separated from each other so that food may impact between them, the neoplasm involves the tissues along the lateral side of the arcade as well as the median side and the palate, the gums are detached from the teeth, tumefied, bleed easily; the teeth can be readily pushed from side to side with the fingers. The facial bulging is generally marked, the filling of the sinuses leads to dyspnœa, or still more marked difficulty of respiration may be provoked by the extension of the tumor into the fauces. These characters are well shown in Plate V.

The differentiation between the empyema of dental origin from that of malignant neoplasm prior to trephining is not always practicable, but is generally comparatively easy. The separation between the gums and teeth usually differ widely in character in the two groups. In the cases of dental origin, if the separation be present, it is almost always limited to a single tooth or to a small area on one side, generally the median, of one tooth, the separated border of the gums is not swollen, is regular and sharp in outline, and presents for identification a mere fissure between the tooth and gums.

In the malignant neoplasms, as shown in Fig. 1, Plate V, the antero-posterior area of the tumor, in A, is indicated by the dotted line, 2, and includes the second and third premolars and

all the molars, in B the extent of the tumor is essentially the same, while in C the new growth only involves the alveoli of the molars. In each case there was a distinct tumor involving the palate, the gums were widely separated from the teeth, the neoplasms denuded of epithelium and bled easily on touch. In neither case was there clinical evidence of cancer cachexia.

In order to complete our differentiation it is frequently essential to make exploratory trephine openings. Some have suggested, and practiced, the making of numerous holes with a small gimlet or drill in preference to the trephine. Good reason for this does not appear.

A competent clinician can determine by percussion the area of unnatural resonance. Wholly unnecessary doubt has been thrown upon this point by Malkmus when he asserts in his "Clinical Diagnosis" that when a sinus is only partly filled with pus the change in resonance is unimportant or unrecognizable. If we examine Plate I, we may understand how a small collection of pus or other non-resonant matter might be lodged in IM′ without markedly changing the resonance of the sinuses, but such a condition is exceedingly rare and if present in this minor degree it is highly improbable that it can be discovered by the small borings. If in the compartments marked IM and SM, we have constantly found that so small an amount as one fluid ounce is detectable by percussion. A ¾ or ⅞ inch trephine opening will heal without blemish in a few weeks and is less dangerous than a gimlet hole. If the latter is used, some of the borings may drop into a healthy sinus and induce empyema, while an ample trephine opening affords efficient exit.

If a sinus is not diseased there is no warrant for a gimlet hole; if it is diseased there is no valid objection to making an opening through which the character and extent of the disease may be determined and remedial measures applied.

The location of the trephine opening may vary greatly. If the cause of the empyema has been determined prior to the trephining it should be made with special reference to convenience in dealing with it. If a given tooth is suspected of being

the cause the trephine opening should be in close proximity to its fang. When the cause is quite undetermined the trephine opening should be near the lower part of the affected sinus, in a position to most likely afford ample drainage, or it may be made at any part of the bulged or dull area.

Great variations will be noted in the bony walls of the sinuses. In some cases, whether the result of dental affections or of malignant tumors, the walls are very thin and soft so that the trephine drops through almost at once; some are so thin and soft that a trephine is superfluous and the opening can be made with a strong scalpel. In other cases the walls are sclerotic, almost as hard as the shaft of a long bone, and greatly increased in thickness, making the trephining very tedious and difficult.

After making the opening the contents and mucous lining are to be carefully examined. Malignant tumors usually reveal themselves as soft, friable and highly vascular masses more or less completely filling the sinuses, the surrounding spaces being filled with pus.

In cases of interdental, palatine or other fistulæ leading from the oral cavity into the sinuses, food particles are very likely to be found in varying amounts. Tumors of dental origin are readily identified by experienced operators by their physical characters. As already observed, when empyema in young horses is due to defective cement or dentine areas, if not already diagnosed by examination of the mouth, are largely identifiable by discovering the roughened, exposed, necrotic area on the tooth fang.

The presence of food in the sinuses indicates a communication with the mouth, but food may rarely be forced from the nostril through the normal communication into the sinuses. A disk of bone from a prior trephining has been found floating in the sinus, and in one case a large piece of cheese cloth, lost by the attendant, while caring for the wounds after a prior operation was found in the affected cavity.

Broken-down odontomes leave all varieties of tooth tissues,

cement masses, ivory, irregular masses of tooth tissues of varying sizes.

In obscure cases the search should be thorough and repeated. The number of trephine openings is not material and enough should be made, if necessary, to permit thorough examination of all available parts. Reflected light aids much in some cases, at times the metal probe is very useful, but wherever it is possible the surgeon's finger is the best exploratory sound.

When we have fully determined the cause we are in a position to make a reliable prognosis. In case of such malignant neoplasms as we have illustrated, there is no hope for recovery or benefit by any known method of handling.

In the extremely aged animals with worn-out teeth and with fistulæ from the mouth to the sinuses, permitting food particles to pass from the mouth into them, it is rarely worth while attempting to handle it, the possibility of effecting a cure is remote, the condition is likely to reappear in connection with another tooth, and, at the best, the teeth are probably all practically worn out and the animal virtually useless. The only hope for recovery is by removing the tooth or teeth which occupy the alveoli through which the fistula passes, denuding the surface of the fistula and hoping thereby to secure closure of the passage. Or we may plug the fistula in some cases with gutta percha.

In cases of empyema due to odontomes which can be surgically removed without extreme mutilation of the face, and it is exceedingly rare to meet inoperable cases, their removal, with ample provision for drainage and disinfection offers an excellent prognosis.

In cases dependent upon defective cement or dentine areas, leading to purulent inflammation of the tooth pulp with escape of the pus into the sinuses, the removal of the tooth with ample provision for drainage and disinfection offers a highly favorable prognosis, the recovery being prompt and permanent. If possible, the tooth should be drawn with forceps, otherwise it must be repulsed after trephining. In repelling such teeth we

greatly prefer the complete removal of the skin, subcutem and periosteum over the disc of bone to be removed by the trephine, in order that there shall be no damaged soft tissues to obstruct the exit of pus or to become infected by the flow of discharges over them. After trephining and definitely locating the fang of the affected tooth we prefer to cut away the external alveolar plate from the lower border of the trephine opening down into the mouth, laying bare the lateral surface of the tooth throughout its extent. The tooth may then be repulsed with punch and mallet, or comminuted with the aid of the bone chisel and the fragments carefully removed.

Great precision need be exercised in removing all fragments of dental tissue, since otherwise the part cannot heal. It is also essential to prompt recovery that ample drainage be provided for each portion of the affected sinus. In case of the maxillary sinuses we need provide drainage for the lateral and median compartments, indicated by IM and IM′ in Fig. 2, Plate I. For IM we secure good drainage by making our trephine opening close against the zygomatic ridge and at the most anterior part of the cavity. In order to secnre ample drainage for IM′ we need make an opening through the inferior turbine into the nostril below the dotted line, IM′. This nasal opening should be large and kept quite open for 24 to 48 hours by drawing through it, and retaining there, a strip of cheese cloth or other suitable material. In order to make this opening with facility we need make a second trephine opening near the tear duct, S, Fig. 2, Plate I, through which the operator can pass a finger against the turbine, then with the other hand pass an instrument of sufficient rigidity and length and slightly curved at the end, up the nostril until it is felt by the finger within the sinus; at the proper point force the instrument through the turbine into the sinus, enlarge the opening sufficiently and draw the strip of cheese cloth in through the trephine opening, out through the nostril and tie the two ends together on the side of the face so that it may not become dislodged. A metal mare catheter, a Eustachian catheter, or a long, curved pair of human uterine

dressing forceps will answer for the purpose of making the opening in the turbinated bone. In rare cases nature has provided proper drainage, but usually it is not complete. In Plate III, Fig. 1, at B, the opening is not direct through the turbine into the nostril, but through the floor of the inferior maxillary sinus into the upper compartment of the turbine and from this it opens into the nostril in such a way as to afford imperfect drainage for the maxillary sinus and adds to the difficulty by involving the first compartment of the inferior turbinated bone. In order to have been perfect, this opening needed to be nearer to the palate and farther towards the ethmoid along the direction of the dotted line passing to B.

An even more defective exit for the contents of the sinus is seen in Plate II, where the food mass, F, must be forced upwards along the direction of the sound, S, to escape through the damaged superior turbine, instead of escaping directly into the nostril on a level of the dotted line, F.

Drainage having been provided its efficiency should be maintained by keeping the exits free. The empty alveolus should be kept plugged for the double purpose of keeping food from passing into the sinus, and air from entering the mouth through the trephine opening when the animal attempts to drink. Water starvation occurs to some extent unless this precaution is taken. The trephine wound should be left wholly open from the first, affording immediate exit for pus and freely admitting air and light into the cavity. As soon as the permanency of the opening through the turbine is assured, it too is to be left wholly free, the cheese cloth strip being omitted. It is erroneous to regard the lining of the sinuses as a wound which needs be closed against air and light, but it needs be looked upon as a suppurating mucous membrane which is normally in comparatively free communication with the air passages.

The after treatment consists of daily irrigations with warm antiseptics. If the cause has been detected and removed and ample drainage secured, the suppuration should at once cease and the discharge thereafter be unimportant. If the discharge

is considerable after the first 24 hours, either the original cause still exists or the drainage is inefficient and the operation should be amended accordingly.

In those cases of empyema from undetermined causes we can only give ample drainage and disinfect. If our search has been sufficient to exclude the continued existence of the original cause we may expect satisfactory results.

As soon as the case is convalescent, when the discharge from the sinuses has virtually ceased, which may be as early as 48 hours after operating, if the patient is otherwise robust and healthy, it may be returned to work, if the surroundings are such as to not make the appearance of the wound a serious obstacle. The animal is quite as well off, so far as the affected parts are concerned, at work as at rest.

OUT of fourteen candidates, the Indianapolis Veterinary College graduated ten at the March examinations.

THREE HUNDRED AND FIFTY covers were laid for the Kansas City Veterinary College annual dinner served at the Coates House, March 6th, 1906. These dinners continue to prove more and more popular with the alumni and students of the institution.

THE STATE VETERINARY EXAMINING BOARD OF MISSOURI has issued 450 certificates to practice in that State—267 were to non-graduates, 4 only of whom were registered under the examination clause; 183 certificates were issued to graduates, 23 of whom passed the Board examination, the others being registered previous to the time limit stipulated in the Missouri law. Of those holding State certificates only 9 reside outside of the State.

DR. COZIER (C. V. C.), of Bellingham, Washington, conducts an extensive hospital to accommodate his large practice. The building was erected last year, and is 48 feet wide, 84 feet deep, and two stories high. There are ten double stalls, four of which are box stalls, and both large and small kennels for dogs and cats. There are also on this floor the office, store rooms, laboratory, and operating room, the latter being equipped with operating tables for horses and dogs, while the laboratory has most of the modern paraphernalia. The upper floor is devoted to sleeping rooms, feed room, toilet and elevator.

THE EDUCATION OF THE VETERINARIAN AND HIS RELATION TO THE COMMONWEALTH.

By L. H. PAMMEL, PH. D., PROF. OF BOTANY, IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Presented to the Annual Meeting of the Iowa Veterinary Association at Ames, January, 1906.

On more than one occasion I have discussed the importance of the veterinarian to the community. I speak to you not as a veterinarian, but from the standpoint of the layman. I have been deeply interested along the lines of work of the veterinarian. The day has happily gone by when the veterinarian is looked upon as a mere horse doctor, or that such epithets should be applied to him. The veterinarian is really one of the most important persons in every community. He should occupy a commanding position.

Nothing has done so much to retard the progress of veterinary medicine in this country as the quack and the subject of quackery. He has elusively persuaded the average man in the community that he knows all about the treatment of animals. The science of veterinary medicine in all parts of the country should unload itself as rapidly as possible from these impositions.

It is my opinion that the veterinarian should be most thoroughly trained in the biological, physical and chemical sciences. In addition he must be a thoroughly trained veterinarian. He should have general chemistry, qualitative and quantitative; physiological chemistry; zoölogy, vertebrate and invertebrate; comparative anatomy, and botany, especially morphology, physiological and some general systematic botany. I would especially emphasize among botanical lines, poisonous plants and bacteriology and general morphology. There are certain zoölogical studies, it seems to the speaker, that properly belong to the more technical part of the teaching of veterinary science and are as important as materia medica, pharmacy, etc. But under the head of chemistry the subject of physiological chemistry is important,

as it embraces a thorough knowledge of the subject of feeds and feeding. There should be a combined course in which chemistry, botany and zoölogy are important adjuncts to each other.

In my judgment the veterinarian should occupy a very important place in every community, for sanitary reasons. The veterinaran needs above all a thorough scientific training in all the sciences that underlie his profession. We owe to the veterinarian much along the line of comparative pathology and comparative anatomy. We also need in the veterinary profession more research men, men who would dignify their calling by papers of great importance. Much has been done by such men as Dr. Bang, who has stamped his individuality on the laws that exist in Denmark on the subject of tuberculosis and general inspection. To the Frenchman Nocard, whose profound researches on tuberculosis are the admiration of the scientific world. Dr. Salmon, who was long head of the Bureau of Animal Industry, did much not only to encourage purely research work of the Bureau of Animal Husbandry of the National Department of Agriculture, but greatly influenced present opinions on various contagious diseases, particularly tuberculosis. He stood in defense of his position like a stone wall where many people looked askance at his position. I say all honor to a man who had the courage of his convictions and expressed them in spite of opposition. Kitt, Ostertag and Drs. Kerhoff have placed the whole subject of meat and sanitary inspection on a high plane in Germany. These men had not only an excellent training in their chosen work, but the whole range of sciences. The profession owes much to Englishmen like Williams.

I think we are all agreed that a course in veterinary science should be strong in these branches that pertain to the profession. On these I shall expand a little later.

The earliest establishment of a veterinary school was in Lyons, France, in 1762; the second one was Charenton, France, in 1763, and the third at Toulouse, France. Veterinary medical education is comparatively young in the United States, although

the celebrated Dr. Benjamin Rush made an attempt to establish a veterinary school in 1806 in the University of Pennsylvania. Another attempt was made to establish a veterinary school in the fifties, by Dr. George Dadd, in Boston. In 1857, an act for the incorporation of the New York College of Veterinary Surgeons was signed at Albany, but nothing came of this effort. The New York College of Veterinary Surgeons was opened on November 23, 1864, with Dr. Liautard as the first professor of anatomy, operative surgery and clinics. The progress of work in connection with veterinary education in this country is known to most of you, as it is comparatively recent.

When this the first school in the United States was established, there was little demand for work of this kind. The only use for graduates was to treat fancy bred stock in our larger cities. Gradually, however, the country practice increased, but not as it should, because too many stock-breeders and farmers consulted quacks. The inspection of meat for export called for an increased lot of men in the profession. The demand for this class of trained men has been greater than that for professional work in country and city.

An important matter connected with every branch of this profession is the training required of the person desiring to enter the profession; this means that the entrance requirements to the veterinary school or college must be made more rigid. In most of our colleges little attention has been paid to the entrance requirements; in fact many of the students who are at the present day pursuing the course of veterinary medicine cannot even claim to have graduated from a high school. The two- and three-year courses in the veterinary schools and colleges are so crowded with strictly technical work that the students do not have time to give any attention to English, Latin or any of the so-called cultural studies. If the veterinarian is to take his place among the other professional lines of work, more attention should be paid to these cultural studies. I take it the veterinarian should be a leader in his community, and to do this he should be a broadly educated man. He should be

able to write a good paper in English. He should be able to read one or two modern languages because a great deal of good literature is published in foreign languages; for instance, he should be able to consult the late periodicals in French and German, to say nothing of the excellent literature which is found in Danish. I most heartily commend an article by Dr. D. Arthur Hughes, who is not only a Ph. D., but a Doctor of Veterinary Medicine, on the importance of the thorough, trained scholar. The broadest and best training possible is needed by the veterinarian if he is to occupy the commanding position he is to take in the future. He not only would include in the curricula French, German and a great deal of science, but let this science be of the best kind. Let it not be of the superficial, the pseudo-science or veneer. In the well chosen words of Dr. Arthur Hughes, — "Yet, strangely enough, many of them have not been placed in strong light before young men of natural aptitude for the work. Still less, never if I mistake not, has there been a complete presentation of the demands for the highest success in the various branches of the profession. Men have been too apt to allow their minds to dwell upon evils about them — the amusingly ignorant quack and his quackery — and the minds thus clouded, to forget the other side of the picture."

The day is at hand for highly trained veterinarians, the opportunities are great. Dr. Hughes says, and I want to quote at length,—"The stigma upon this profession, if there is a stigma, is caused by a too low standard of education. That is a false notion, and ludicrous, because it is so false, that men whose lives are given to studies in comparative medicine are of necessity inferior in mind. We might as well apply the axe to the root of the tree and say that this groundless opinion is based upon the observation of the public that the veterinarian in this country has not had the amplitude of knowledge demanded of him by his science, that thoroughness of training expected of a professional man, that positive familiarity with the many branches and recent advances in comparative medicine and bi-

ology which it is accustomed to expect of a scientist. A change will come in public opinion when ignorance, always the butt of the satirist, is displaced by knowledge; when the standard of education for admission of members to the profession is raised to cover the advances in modern medicine; when the graduates have a familiarity with, not a few, but all the branches of veterinary science in a degree at least equal to that required in Europe. French, English, and more particularly German standards of education have remodelled the universities in this country during the last twenty-five years and made them the pride of the nation. When a similar change comes over the veterinary colleges in America we will have a training suited to American conditions, at least as valuable to us as that of Alfort is to France; Giessen, Dresden and Berlin are to Germany, and the Royal College of Veterinary Surgeons is to the British world. When such a change comes, our graduates will be those of a long and thorough training, proved knowledge and scientific efficiency. It is time that the veterinary profession should be undecided in some things. Plain speaking is likely to bring out the truth. The ungarnished truth is that in our training we are lapping far behind Europe. There are not and cannot be any short cuts to a thorough knowledge of veterinary medicine as it is taught and practiced in the old world. If we bemoan the state of things in the profession, the fault is entirely in ourselves. We need a fuller equipment for our work. We need to go over in our preparation every branch of the many branches of the science, conscientiously and faithfully. We must of needs be masters in observation and the record of observations, skilled in the theory of medicine and practiced in clinical medicine, abreast of the times in pathology and bacteriology, adepts in posology and not mere amateurish dabblers in drugs. We must be sterner and more intense students, wider in our reading. We must in our preparation for the study of medicine have a knowledge at least equal to that required in human medicine and in our medical training we must cover the whole field earnestly and consistently. In this age, which is

tingling with intellectual activity, when advances in science occur hourly, when there is such zest in research—who are we that we should be so foolish as not to know what is required of us? The standard of our training must be raised. The time required for our training must of needs be longer. The times require it, and the state of the profession demands it." Those who have had some work as instructors in the classroom can appreciate fully the importance of a longer time for training. Therefore I want to make a plea for higher entrance requirements for the veterinary course to our schools and colleges.

In looking over the work in the University of Pennsylvania, which may be looked upon as ranking high among colleges, I find the entrance requirements to the veterinary course as follows:

Candidates who have received a collegiate degree, or who have passed the matriculate examination of a recognized college, or who hold a certificate covering the requirements stated below, from a recognized normal or high school, are admitted without examination. Other candidates for admission are required: (1) to write an essay of about three hundred words, as a test of orthography and grammar; (2) to pass an examination in elementary physics (as in Gage's Introduction to Physical Science). Graduates of recognized veterinary schools requiring three years' attendance may enter the third year without examination. Students who have attended one or more sessions in a recognized veterinary school will be allowed credit for time, but must pass an examination upon entrance. Graduates of recognized colleges of pharmacy are admitted to the first year without an entrance examination; and, on passing examinations in general chemistry, materia medica and pharmacy, are excused from attending lectures in those branches, and from performing the corresponding practical work in the chemical and pharmaceutical laboratories.

The entrance requirements to the New York State Veterinary College, Cornell, are as follows: Candidates for admission to the State Veterinary College, except those specified below,

must pass satisfactory examinations in the following subjects: 1. English. 2. American history and civil government. 3. Plane geometry. 4. Algebra, as much as is contained in the larger American and English text-books, and any three of the following: 5. Elementary French. 6. Elementary German. 7. Latin grammar and Cæsar. 8. Virgil, Cicero, and Latin composition. 9. Entrance Greek. 10. An amount of any group of the following, making the equivalent of two years of high school work: physics, botany, geology, vertebrate zoölogy, invertebrate zoölogy, advanced French, advanced German. Students are admitted without further examination on the Regents' Veterinary Student Certificate. The New York law requires a four year course of successful high school work equivalent to 48 academic counts.

Efforts are being made to raise the standards of entrance requirements to the veterinary course in the Iowa State College, in order to allow of a better training.

The following comparative table shows the required work for the degree of Doctor of Veterinary Medicine in the New York Veterinary College, the University of Pennsylvania and the Iowa State College; the numbers given here are university or college counts. The usual time for a clinic being from 2-3 hours.

	U. of Penn. No. Counts.	Cornell. No. Counts.	Iowa. No. Counts.
Anatomy	15	23	24
Animal Husbandry		3	21
Botany	5	0	5
Bacteriology	5	6	3
Conformation and soundness			2
Chemistry and urinary analysis	9	8½	11
Hippology			2
Horseshoeing	2	0	2
Infectious Diseases Meat and Milk Inspection, Parasitism and Sanitary Science	5	10	6
Jurisprudence	2	4	1
Materia Medica and Pharmacology	3	6	6

Medicines, Theory and Practice. .	19	12	12
Microscopy, Histology and Embryology . .	3	8	7
Obstetrics and Zoötechnics	6	4	2
Physiology.	14	8	6
Pathology	5	6	10
Surgery	17	8⅔	12
Surgical and Medical clinics . . .	36	18	24
Diagnosis and Therapeutics . . .	6	2	2
Thesis and Research	0	6	0
Zoölogy	3	See Parasitism	8
Total	155	132⅙	165

It will be seen from the above outline of the courses given in the three institutions that the veterinary department of the Iowa State College lays considerable stress on the subject of animal husbandry work, Cornell giving three hours, while our institution gives twenty-one hours. This is perhaps more than is actually needed. The subject of animal husbandry is certainly of great importance to the veterinarian. The veterinarian above all should be familiar with every branch of the live-stock industry. He should be familiar not only with the proper aspects of breeding, but the fundamental laws in zoölogy, taking up such problems as heredity and environment. As factors in development of an animal, Cornell University lays some emphasis on the subject of research. This, too, is eminently proper, because the veterinarian should not only be a well-informed man, but he should be familiar with the research methods. Hippology should be given an adequate space in the veterinary curriculum. The veterinarian engaging in the military service will find abundant opportunities for his skill. Some stress, it seems to me, should be laid on forage plants and the chemistry of feeding.

From what I have said it is very evident that the requirements in the future for a veterinarian shall be much more drastic than they have been. Laws should be enacted in various States which would give us not only a better trained profession

but a better system of local and State inspection. The problems are certainly sufficiently important to warrant it and to demand prompt action. Let us take up a few of the problems: Our attention naturally turns first to the subject of milk and milk supplies. We know that fresh milk practically contains no organisms except as they come in through the fore milk. While it is not possible to obtain by ordinary practice sterilized milk, yet the number of organisms may be very materially reduced by the proper care of milk. As to the number of organisms found in milk the following figures will give us some idea. Con, in his Agricultural Bacteriology, reports as follows:—

Number of Bacteria per CC.

In fore milk,	55,000	At close of milking,	00
In fore milk,	97,000	At close of milking,	500

Now city milk contains a very large supply of organisms, chiefly because it is transported a long distance, allowed to stand, probably also with the accumulation of some dirt.

It is believed by bacteriologists that the number of organisms present in milk is a pretty good indication of the sanitary condition of the same, at least this method of investigation is relied upon in several of the Eastern cities and some of the Western. For instance, the town of Montclair, N. J., having a population of 13,962, the health inspector, Mr. M. O. Leighton, has carried on a bacteriological examination of milk delivered in the city. His investigations extended over a period of two or three years and proved to his satisfaction that the sanitary condition of dairies can be safely judged by the number of bacteria in the product. All the samples of milk which he examined in this connection had been bottled at the dairies, and so far as possible they were taken from the evening milking, their age, when examined.

The inspection of dairies by the veterinarian, as the investigations of Mr. Leighton show, is, therefore, an important piece of work. It is a part of the veterinarian's business to see that the stables are so constructed where good drainage can at all times be secured. There should be ample provision for light

and ventilation and the manure troughs should be built in such a way as to facilitate the cleaning. Mr. Leighton states with reference to the examinations of milk from good clean dairies,—

"The cattle in these stables are carefully groomed, fed upon wholesome food, and regularly attended by a veterinarian. The attendants employed are kept personally clean, and are provided with every facility for maintaining their cleanly condition throughout the milking period. Of highest importance are the dairy houses in connection with these first three establishments. In them are provided tight steam chests, in which all utensils necessary in the preparation of the product for the market are exposed to steam under pressure and thoroughly sterilized. The other principal features in connection with the dairy houses are the coolers over which the milk flows as soon as it is drawn from the cows, from whence it goes to the bottler and is bottled immediately."

One might think that it would be next to impossible to have clean dairies and surroundings, only in the finer equipped establishments, but Mr. Leighton found that in one of the old-fashioned stables, where great care was used, in spite of the rough projections, innumerable cracks and all the disadvantages common in country stables, there are evidences of care and attention everywhere. The explanation to him of the first high results noted at the beginning of the record brought about all the alterations suggested. The owner is an ideal dairyman in spite of his poverty.

The demand for inspection is not only required where milk is delivered in the cities, but for those who are using milk in dairies and creameries.

Mr. Wilbur J. Fraser, of the University of Illinois, states the case as follows: "There are, and doubtless always will be, certain men producing milk who, from the slovenly methods they practice, are a disgrace to the dairy business. Such laws should be enacted, and such a system instituted, as will compel these men to be decent in their practices in handling milk or quit the business. It is time the dairymen moved in this mat-

ter and asked for inspection. If they do not, the public will soon do so, and when such matters are taken in hand by those who do not have the necessary technical information on the subject, the business may be injured and injustice done to honest dairymen who are putting out a good grade of milk."

There are many dairies in the State of Iowa that supply milk to city patrons that should not be permitted to operate. We have before us the deplorable condition of certain dairies not very far distant from the college here at Ames. I have been upon farms in this State during the past few seasons where the dairy cattle waded in mud up to their ankles and these places are sometimes pointed out as being model farms in all that pertains to the management of that institution.

Now, you may ask why should the veterinarian be called upon to inspect what seems not in his profession. I take the ground that the whole subject is one of health and disease; that where such bad conditions prevail it naturally leads to disease of some kind and the only one capable of clearly defining these diseases is the veterinarian; hence, this matter of inspection should properly belong to him. He may call in, of course, as many expert bacteriologists as he desires, but for an opinion as to diseases and general management of this inspection, the veterinarian's certificate should be required. When we come to contagious diseases we know that a number of the same are transmitted through milk. It is no longer disputed that food like milk, oysters, do transmit typhoid fever. Swithinbank and Newman make this statement:

"We have seen that the disease is commonly spread by polluted excreta; in its early stages by alvine discharges, in its later stages and during convalescence, in a certain number of cases, by the urine; that the bacillus may remain in the body for long periods after convalescence, and hence apparently healthy persons may carry about and possibly disseminate the seeds of the disease for months or even years; that the bacillus may be voided in countless numbers during such periods; that under certain circumstances such discharges, or the dried dust

resulting ultimately therefrom, may contaminate water or milk; that when this accident occurs, a comparatively small pollution may lead to a widespread epidemic among persons consuming such water or milk; and finally, that there is some evidence to suppose that the virus of the disease may remain dormant but alive for long periods of time in a saprophytic stage of existence. But little reflection will be necessary to convince any careful observer that an intelligent appreciation of these facts is of essential importance in considering the relationship of polluted milk to typhoid fever, or as, in part, explanatory of spasmodic or apparently spontaneous or repeated outbreaks."

Schuder arrived at the following conclusions concerning six hundred thirty-eight epidemics of typhoid fever studied by him: "It seems that 70.8 of such epidemics were produced by drinking infected water, 17 per cent. by drinking infected milk and 3.5 per cent. from other forms of food, 9 per cent. by wearing the clothes of the typhoid patients, dust, etc." The following statement of the subject will be of interest in this connection.

Sedgwick in his "Principles of Sanitary Science and Public Health" makes the following interesting comments of the spread of typhoid fever in the village of Marlborough, Mass., through skim milk. "In August and September, 1894, a small epidemic of typhoid fever appeared in the city of Marlborough, Mass. Various 'theories' of the cause of the outbreak were held or suggested, and the local newspapers contained numerous letters on the subject, some alleging that the water supply was infected, some that the sewers were to blame, and some that accumulations of filth, especially dump-heaps, were responsible. The localization of the cases, however, not only disproved these theories but also suggested milk as the probable cause. It soon became evident, nevertheless, that none of the regular milkmen were involved, the cases apparently deriving their milk supplies from a variety of different sources. Eventually, however, it turned out that there existed within the city

itself a creamery from which was despatched daily a wagon loaded with skimmed milk (separator milk), and that nearly all the cases of typhoid fever had been supplied with such skimmed milk either from this wagon or directly from the creamery itself. Further investigation showed that the driver of the skimmed-milk wagon was at the time of the inquiry living on the upper floor of the creamery, and just recovering from a severe attack of typhoid fever. This young man had not only been the driver of the wagon, but had also worked over the milk, transferring it, filling cans, and otherwise making himself useful about the creamery."

We come now to the subject of the conveyance of other infectious diseases, namely, scarlet fever and diphtheria. These diseases will be treated collectively although there is no relation between them from a bacteriological standpoint. There seems to have been evidence for a long time that scarlet fever is conveyed by milk. As early as 1882 the medical inspector under the government local board of North London thought he had pretty good evidence of the conveying of scarlet fever through milk. In this case, however, it was supposed by Mr. Power that the disease occurred in the animals on a certain farm. Dr. Klein, investigating the question at the time, obtained negative results in most instances.

Swithinbank and Newman record the evidence of various outbreaks of scarlet fever as due to milk as follows:

City.	Year.	Cases.	Deaths.
Handsworth	1876	37	4
Fallowfield, Manchester	1879	35	
Paddington and Bayswater	1880	Families 84	
Halifax	1881	510	86
Greenock	1882	20	
Dundee	1883	17	4
Sutton Goldfield	1891	40	5
Glasgow	1892	236	11
Hastings	1893	40	1
Beverly and Salem	1901	60	11

Now turn to the subject of diphtheria. We find that the

evidence of transmission is usually supposed to be much better than in scarlet fever, but the facts do not bear it out.

What relation does the subject of diphtheria bear to the occurrence of the somewhat similar disease in lower animals, and how far may the veterinarian be called upon to prevent outbreaks of this disease, is a question of practical importance. There is no longer any doubt in the minds of bacteriologists and sanitarians that the organism described by Klebs in 1883, and since known as Klebs-Löffler bacillus, is the cause of this disease, the organism having been found in the false membrane in patients suffering from this disease and time after time found to be the cause. It is a well-known fact that the diphtheria organism produces in addition to the false membrane, general poisoning, muscular weakness, and tendency to albuminuria. It is further recognized that certain other bacteria are concerned in producing secondary complications, such as suppuration, and gangrenous conditions. It is a well-known fact also that there are other organisms resembling the Klebs-Löffler bacillus that so closely resemble it in some of its culture and morphological characteristics and the clinical symptoms produced by them that it is difficult to diagnose the cause unless cultures of the Klebs-Löffler bacillus are made.

As to the distribution of the organism and nature the reports are somewhat conflicting. It is a well-known fact that dried diphtheria membrane kept in the presence of light and at room temperature contains living and virulent diphtheria bacillus at the end of several months. The same results have been obtained with bacilli obtained from cultures kept on dried threads. It is therefore very evident that this organism has considerable vitality. On the authority of Prof. Sims Woodhead: "the persistence of the diphtheria bacillus for periods up to eight weeks is of very common occurrence whether antitoxin be given or not; indeed, the majority of cases appear to retain bacilli in the throat for from two to nine weeks." Other cases might be cited, but it is not necessary to enter into detail on this occasion.

Suffice it to say that the veterinarian should also be our guardians for outbreaks of this kind.

Let us briefly turn our attention to this subject of tuberculosis. No other disease in modern times has attracted so much attention as the subject of tuberculosis, because of the large number of deaths annually occurring in all parts of the civilized world, and also because it so widely affects bovine animals. The organism discovered by Koch in 1882 as the cause of this disease certainly has had a most important bearing upon the subject of the treatment of the disease. The disease, at first supposed to be hereditary, although known to be contagious as early as 1843, when Klenke had produced tuberculosis in rabbits by intravenous injection of tubercular material. But to Villemin belongs the credit of having first carried on systematic experiments in proving that this disease is contagious.

In a recent general summary of the subject by Dr. Harris, the following essential facts are given:

Variety of Tuberculosis.—This has been the subject of repeated investigations during recent times, especially so since the address of Koch at the Congress of Tuberculosis in 1901 in which he made the statement that human and bovine tuberculosis were distinct, and that if a susceptibility of the human subject to the latter exists, infection is of very rare occurrence—so rare that it is not advisable to take any measures against it.

Previously to this, Theobald Smith had pointed out differences between human and bovine tubercle bacilli, the most important being that the latter possesses a much higher virulence to the guinea-pig, and other animals, and in particular that human tubercle bacilli, on inoculation into oxen, produce either no disease or only local lesions without any dissemination. He also found that the bovine bacilli on cultivation grow less vigorously for a time, and tend to be shorter and straighter than the human bacilli. Koch's conclusions were based chiefly on the result of his inoculations in the bovine species with human tubercle bacilli, the result being confirmatory of Smith's, and, secondly, on the supposition that infection of the human

subject through the intestine is of very rare occurrence.

Muir and Ritchie in their recent text-book on the subject of bacteriology (the American edition edited by Dr. Harris) entirely disagree with the opinions expressed by Koch and hold to the view expressed by many of the English, French and Danish veterinarians. They say that the ox is little susceptible to human bacilli may be accepted, but it does not follow that the converse is true, namely, that the human subject cannot be infected from the bovine species, seeing that bovine tubercle bacilli have been found to have a greater virulence for all animals tested than bacilli from the human subject. Moreover, there are cases, notably those recorded by Ravenel, in which direct inoculation of the human subject with bovine tubercle has occurred. Even if the human subject is little susceptible to bovine tuberculosis, it is quite likely, in view of the large proportion of young subjects exposed to infection, that the number of cases of tuberculosis produced in this way is by no means small. And, furthermore, although the ox is little susceptible to human tubercle bacilli, tuberculosis with general infection has been produced in calves by means of them on more than one occasion. Such a result has been obtained by Ravenel, and also, in this country, by Delepine. There are also facts which go to show that tubercle bacilli cultivated from lesions in young children have a higher degree of virulence for animals than those obtained from adults; that is, they resemble more the bovine bacilli; this is what one might expect if the bacilli in question had come comparatively recently from the tissues of the ox. As at present the subject is still under investigation in this and other countries it would not be justifiable to dogmatise, but in the meantime, we see no sufficient reason to depart from the view entertained up to this time, that the tubercle bacilli infecting mammals are of one and the same species, though differences in virulence obtain and that milk containing tubercle bacilli is a highly important source of infection to the human subject. It may also be added that tubercle bacilli obtained from other mammals than the ox

generally correspond more closely, as regards their virulence or inoculation, with bovine than with human bacilli.

This seems to me to be a fair statement of the case. You are at liberty, of course, to take whatever view you choose. The evidence, it seems to me, is that we are dealing with a somewhat polymorphic species which occurs under slightly varying conditions in bovine animals, man and fowls. The organism, it seems to me, as it occurs in bovine animals is contagious to man. Whether you accept these views or not it is certainly pertinent to the question whether cattle and all forms of meat should not be inspected. The claim has been made by several packing-house people that hogs coming from certain dairy districts are much subject to intestinal tuberculosis; that they have observed a relationship existing between tuberculosis and the use of milk from creameries. May we not also ask therefore that all meat supplies should be inspected whether for export or interstate commerce. Should not our commonwealth demand or make provisions for a district inspection. Every county, or when the city is large enough, should have an abattoir where all kinds of live stock should be inspected. There is no reason why the people of Europe should have more wholesome food than we are enjoying. If we are to have inspection we should have inspection both of the live and slaughtered animals. If the inspection that I have in mind shall be carried on by the veterinarian, it means that he should be broadly educated and that he will occupy a commanding position in the community. I must, therefore, maintain that nothing in the way of education is too good for the veterinarian. Let the calling of the veterinarian be dignified by the laymen and the profession itself. Let an active body of laymen by the help of the veterinarian secure more favorable legislation to secure better and more wholesome food. This great commonwealth with its wealth of live stock should secure the passage of the best inspection laws of any State in the Union. With good inspection and the eradication of tuberculosis from our herds, there will be a larger demand for our blooded stock.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

DIAPHRAGMATIC HERNIA.*

By DR. G. W. KINSEY, Wheeling, W. Va.

Noticing an article in the December number of the AMERICAN VETERINARY REVIEW by Dr. E. L. Moore, of the Dakota Agricultural College, describing a case of diaphragmatocele, whose symptomatology differed so radically from the one I had occasion to visit professionally, about the same time, I thought perhaps a recital of this case would be of some interest to the profession.

The animal was a bay gelding, five years old, weighing about 1200 pounds, and belonged to a farmer who lived about ten miles from town. While on his way to market one afternoon between three and four o'clock the horse was watered at a roadside trough near the top of a hill, perhaps a half-mile long. On going down the hill a short distance the owner noticed the horse twisting his tail and showing signs of pain. When I saw the animal, about an hour and a half afterward, he presented the following symptoms: Temperature normal, pulse full and rather soft, bowels loose, spasmodic pain, with an inclination to walk as the pains came on. During the two hours that I was with him he laid down but twice, and rolled furiously from side to side, perhaps half a dozen times.

There was a slight distension of the nostrils, which became more prominent as the case progressed. Perhaps the most differential symptom from a case of spasmodic colic was the peculiar stiff elevated position of the head and neck without looking around or turning to one side. This horse perspired none while I saw him, and was practically under control at all times. Medicinal treatment had little effect. The patient was seen again about four hours later and a half hour before he died, and presented the same symptoms, somewhat aggravated, except the pulse had become hard and wiry, the nostrils more distended and the breathing short and hardly perceptible; no inclination to lie down and moving continually.

*Presented to the Annual Meeting of the Ohio State V.M.A., Jan 16, 1906.

On post-mortem the following morning the chest cavity was found to contain some five to six gallons of blood or highly colored serum and about fifty feet of the small intestines with the attached peritoneum. These bowels had passed through the foramen dextrum or lower opening in the diaphragm, which is for the passage of the posterior vena cava. For fifty feet of bowel to pass through this opening and be lodged in the chest cavity would seem almost incredible and perhaps would be more interesting from the standpoint of morbid anatomy. No gas had accumulated in the bowels in either cavity to amount to anything; those in the abdomen were scarcely colored or inflamed, while those in the thorax were hæmorrhagic, black and filled with blood. The lungs were very light, floated upward and perhaps one-third their natural size. The patient probably died from intoxication, as no oxygen could be taken into the blood. The history of the horse was that he had never been sick before in his life. He lived scarcely nine hours after the attack. The exciting cause was probably the drink of water and immediately going down the hill.

I gave a diagnosis of colic with volvulus and probably or possibly a rupture of the diaphragm. An unfavorable prognosis was given.

The symptoms presented by the case reported by Dr. Moore are as follows:—Animal bathed in perspiration, pulse imperceptible, respiration labored, temperature 103.8; pawing with the front feet occasionally, looking around, lying down and usually stretching out on one side.

Rectal examination revealed the presence of a few balls of fæces, dry and unmasticated. The attendants stated that during the preceding night the patient had frequently sat on his haunches like a dog for several minutes at a time. The history of this case was that he had received a bushel of oats on Thursday, was taken sick on Friday, and died Sunday morning about two o'clock. He had twelve to fourteen feet of bowel imprisoned in the thoracic cavity and lived perhaps forty hours.

These are the cases that require some mental strain in order not to fall down, as we seldom meet with them in practice. While the anatomical conditions are almost the same, the outward manifestations may be quite different. One of these cases had nearly four degrees of fever, the other had none. In one the pulse was imperceptible, in the other full. In one the bowels were constipated, in the other relaxed. One had a tendency to look around, lie down and roll, the other to go straight

ahead. One perspired freely, the other very little; and in conclusion I might add that about the only symptom in common was that they both died.

A DIMINUTIVE FOAL WITH CONVULSIONS.

By WILLIAM W. YARD, D. V. S., Denver, Colorado.

On March 12th I was called to go to the headquarters of a circus eight miles from Denver. Upon arriving I found a colt which had been born early in the morning in convulsions. The mother was a small circus pony. Upon investigation I found that about an hour after the colt was born it was taken with convulsions, which were repeated all through the day up to this time, which was 2.30 P. M.

In making an examination as to the cause, I found that the colt was so small that it could not reach its mother's teat to nurse. It was exactly 12 inches high, 18 inches long, and at this time weighed 14 pounds. The hostler told me the colt had tried to nurse at first, but could not, and that nothing passed either the bowels or kidneys. Not having nursed the mother, it was evident that not having the essential physic which the new-born gets from the colostrum or first milk, a physic was indicated. Upon looking over the stock of drugs which a circus generally carries, nothing of this kind could be found. The colt was getting weaker after each paroxysm, so as a last resort an egg was beaten up and given the patient. At the expiration of an hour the bowels moved freely, and by five o'clock in the afternoon the colt was up and walking around.

I presume water would have had the same effect. The fact of the liquid causing a shock to the intestinal walls started the vermicular motion of the intestines. The colt is perfectly well, and will start on its summer tour with its mother April 3d.

AS THE REVIEW goes to press it learns that the veterinarians of Baltimore, Md., have started to raise a fund for the relief of the veterinarians of San Francisco, many of whom lost everything they possessed in the world including their homes. Always foremost in every movement for the advancement of the well being of the profession, Dr. Wm. Dougherty called a meeting of the practitioners of the Monumental City to consider means of raising funds for the immediate succor of our brethren on the Pacific Coast, and a respectable sum was subscribed at once. The subscription list was thus started, and all subscribers to the REVIEW are invited to unite with the Baltimoreans.

STAKED: A CASE OF EMERGENCY.*

By J. H. McLeod, V. S., Charles City, Iowa.

On February 11, 1905, an urgent call came by 'phone to visit a Shorthorn cow. She was four years old, carrying her second calf, and shortly due. While talking to the owner was informed that the cow, while attempting to jump out of the yard, got impaled on a fence stake, the owner finding her in that condition, and by hard lifting he succeeded in getting her off the stake and into the barn. Was also informed that the case was a desperate one, as the abdominal contents were protruding from the incision.

The weather was below zero, the drive 11 miles and the outlook for a recovery on the whole very bad, and so informed the owner to that effect. He would not agree, however, and an attempt at least should be made to relieve the cow.

On arrival my patient was standing in stanchions with a very distressed appearance. Had laid down and got up several times. On the off side and in the inferior diaphragmatic region was the injury, and protruding therefrom quite a large portion of the stomach and omentum. The animal was quite offensively inclined, and would kick wickedly when an attempt was made at examination. The hopples were quickly applied and the cow placed on her back, the four feet securely locked together, and all made fast to the top of the row of stanchions. The wound and that part of the stomach and omentum protruding (being very dirty and covered with white frost), were carefully washed and disinfected with warm creolin solution and returned to the abdomen. The wound needed nothing only trimming of the ragged edges and stitching, which was done with a small seton needle, and a three-inch cotton bandage interrupted X stitch through the whole integument, deep into the muscles and skin, leaving a tube at lower aspect of the wound for drainage, and dressed throughout with boracic acid. The cow was allowed to get up, which she did with some help. Sloppy feed ordered for a few days. The stitches were removed in ten days, when there was good union throughout the wound, and complete recovery.

REMARKABLE FECUNDITY IN DOMESTIC ANIMALS.

The following extraordinary cases came to the Review almost simultaneously, and are so remarkable as to constitute records in each instance, so far as we have been able to learn.

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* Presented to the Annual Meeting of the Iowa Veterinary Association, January, 1906.

Seven Calves at One Parturition.

By J. F. WINCHESTER, D. V. S., Lawrence, Mass.

On March 20, 1906, on the farm of Mr. H. S. Hill, Pleasant Valley, Methuen, Mass., a Durham cow, weighing 1,100 pounds, gave birth in two hours, to SEVEN CALVES, comprising four

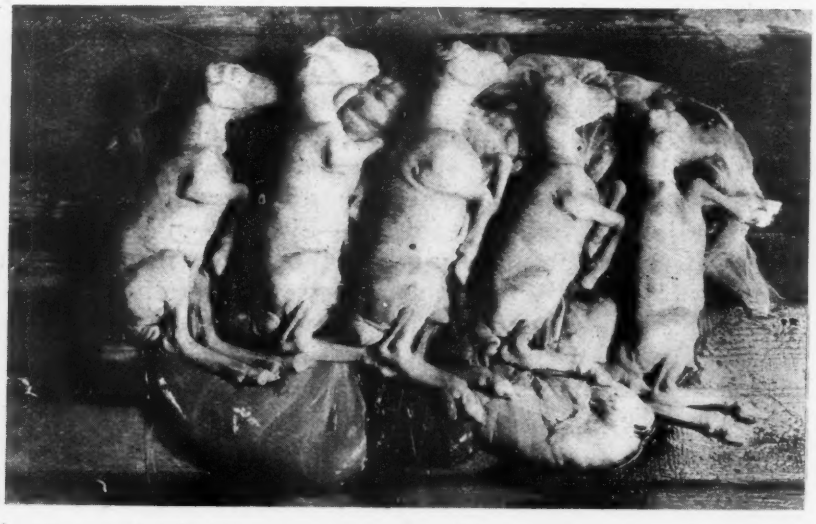
males, weighing 30 pounds each, and three females, weighing 25 pounds each. All of these calves died during or directly after birth. The cow did well.

* * *

Five Lambs at One Parturition.

By W. REID BLAIR, D. V. S., New York Zoölogical Park.

These FIVE LAMBS were found *in utero* in a Chinese domes-



tic sheep, of the fat-tailed variety. The ewe died as the result of congestion and œdema of the lungs just at approaching parturition. The lambs were fully developed in every respect, the average weight being about three pounds, and the largest one measured 18 inches in length.

SURGICAL ITEMS.

By Drs. Louis A. and Edward Merillat, Chicago, Ill.

CRYPTORCHID CASTRATION ON THE OPERATING TABLE.

From time immemorial a certain particular position has been regarded as a *sine qua non* in cryptorchid castration. It was thought that the casting harness that firmly flexed the hind legs upon the pelvis and spread them apart as far as their elasticity would permit was the *one* and the *only* attitude that rendered this operation possible. Miles, others before him and many very skilful operators since his demise are responsible for this widespread impression. Prof. Williams (February Review, 1906), tries to prove this erroneous and says so in no equivocal terms. We have it that a cryptorchid horse was successfully castrated upon an operating table. The cryptorchid

Miles' method of securing a horse for ridgling castration, showing the use of an improvised "spreader" to still farther part the legs.

was no ordinary one. Several veterinarians had failed to find the hidden testicle. The inguinal channel as a result of the past bungling attempts to find the testicle was blocked with an abundance of scar tissue. But in spite of these obstacles the operation was successfully performed on the operating table and no incident marred the convalescence. Forsooth, the the operation was a success. Surely, after this, the old saying "There is nothing new under the sun," will no longer stand the acid test. On the one hand is the picturesque Miles, sitting flat upon the tail of a ridgling secured in the barn-yard with sixty feet of rope, while on the other is the modern surgeon, gowned in immaculate white, with his cryptorchid on a scrupulously clean operating table, under profound anæsthesia. This is, indeed, a transformation, but before adopting the method as a standing one let us see if it is as ultra-practical as we might be led to believe. This is a very pertinent proposition. It deserves to be well thrashed over before jumping wildly and enthusiastically at a conclusion, which might easily lead one into a very critical situation.

We will admit that the operation in question has shown that a cryptorchid *can be* successfully castrated upon a *special operating table providing the subject is under profound anæsthesia.* But has it shown the practicability of the method? We think not. In the first place the ordinary operating table will not answer the purpose. While standing upon the floor at the patient's buttocks the operating region is out of reach and if one climbs upon the table its narrow edge will be found decidedly uncomfortable. It is, in fact, an impossible position on the ordinary table. Furthermore, it is positively dangerous both to patient and surgeon to lift a hind leg "ceilingward" without first administering a general anæsthetic. A horse in that position, not anæsthetised, will always tug violently with the uplifted leg and thus bruises the hip and strains the member. I would warn veterinarians who operate for revenue against this practice. Besides, will general anæsthesia ever be universally administered for ridgling castration? If not the operating table will have to be eliminated and the old method revived. The finality of the argument is that with the ropes the operation is finished and the patient is at the feed box, little the worse from the ordeal, before the tabled patient can be anæsthetised. Furthermore, anæsthesia is superfluous in cryptorchid castration. The operation does not provoke long-continued suffering. There is some pain while incising the skin and a sharp pang when the

testicular cord is emasculated, but otherwise there is no pain that will compare with the discomfort of taking and reviving from the anæsthetic.

Furthermore, while championing the cause of the operating table as so very practical for ridgling castration, it must not be forgotten that few such operations are performed in the hospital. These are nearly all out-of-door operations. The surgeon must go to his patient with a portable restraining apparatus.

We have tried both the *table* and the *ropes* for such operations, including ablation of the mammæ, dissection of scirrhous cords, and reduction of strangulated hernias, and have found that the latter places the seat of operation in a much more accessible position than the former, even if an anæsthetic is used.

Finally, it is absolutely wrong and positively misleading to claim too much for any one of the various methods of restraining the horse for surgical operations. Some operations are much more easily performed upon the operating table, others in the stock, others with the ropes (or harness), and still others with the single sideline in the standing position. To claim that any one is particularly perfect under all circumstances is quite as wrong as to condemn either one as being entirely useless. They all have their good points, they all have their appropriate places, and none are universally satisfactory.

The selection of the method of restraint is no small item in any given equine surgical operation. It is a problem that should be decided only after intelligent consideration. Certain individuals, certain morbid processes and certain seats of disease demand particular restraining methods if all of the small things which contribute to a practitioner's success is thought worth while. It is quite as wrong to cast and tie up a horse on the table or ropes for a trivial operation as it is to attempt a major procedure in the standing position. And, again, a horse that complacently submits to an operation of considerable magnitude (firing, for example,) might have fought the recumbent restraint most violently. It is also as harmful and as foolish to anæsthetize unnecessarily as it is to omit the anæsthetic during a long painful dissection. These recommendations might be enumerated indefinitely. The only point we wish to make, however, is that of correcting an erroneous impression that any one apparatus for securing horses is absolutely perfect under all circumstances. The veterinarian who is daily engaged in operating on all-comers (the draft-horse, the cab-horse, the coach-horse, the broncho, the cheap plug, etc., etc.), in all different

states of health and for all manner of diseases, will very soon discover the patent defects of any single apparatus and will very soon learn to duly respect the good points of each of the standard methods.

The ropes will always retain their place among the expedients to secure the large animals, because a large majority of all surgical operations are performed outside of the hospital, if not because certain ones are greatly facilitated by their use. It is wrong to ignore them in training the student. They will be compelled to use them more frequently than their polished table in the hospital. It is a sin of commission to stigmatize them and a sin of omission to fail to teach their appropriate use. Many a neat surgical operation is performed with their use every day.

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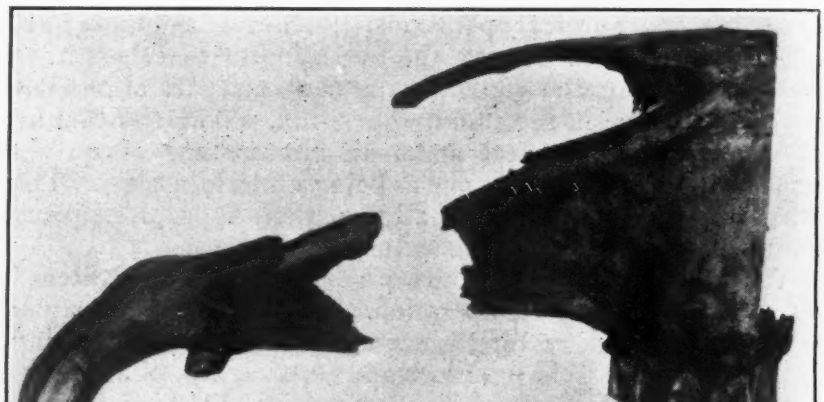

Fractured Premaxillæ caused with a ratchet mouth speculum, reported in the March number of the REVIEW.

THE ONTARIO VETERINARY COLLEGE has graduated more than 3,000 men in the 44 years it has been established.

THE VETERINARIANS OF KANSAS who attended the Missouri Valley Association in Kansas City in February, held a special meeting to consider plans of campaign for procuring a veterinary practice law in that State at the hands of the next Legislature. The veterinarians of the State are waking up to the fact that the practice laws recently enacted in the adjacent States of Nebraska and Missouri are causing a great influx of non-graduate practitioners into Kansas.

EXTRACTS FROM EXCHANGES.

GERMAN AND HUNGARIAN REVIEW.

By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Great Bend, Kansas.

A NEW REMEDY AGAINST TUBERCULOSIS [*Extract from a Lecture delivered before the German Agricultural Society, by Prof. v. Behring*].—The bovovaccine introduced by the author into practice, has the mission to immunize young cattle against tuberculosis, which then will produce in the course of a few years milk adapted for the nourishment of babies. To accomplish quicker this purpose it would be recommendable to inoculate at the present milking cows; for this object, however, the bovovaccine is impracticable on account that a dose of the same, which would prove harmless for newly-born animals, would prove fatal to older animals with symptoms of œdema of the lungs. While the introduction of material containing the living bacilli under the skin is not accompanied with that danger, however, the results of the inoculation are doubtful on account of a large quantity of the inoculated material remaining under the skin, thereby producing local tubercular processes which then retards the process of immunity. This kind of preventive inoculation of cows is also dangerous for the reason that from the local tubercular nodules, living tubercle bacilli may enter the circulation, and from there into the milk. The author announced before the Congress of Tuberculosis at Paris, a new anti-tubercular product which will not possess the described danger and still accomplish immunity in cattle. This product, however, must also be injected into the blood, and its production is so expensive and lengthy, at the same time very unstable, that its practical use would undoubtedly meet considerable objection. Lately, however, he succeeded in producing by a new method a material which does not contain living bacilli, yet it possesses the immunizing qualities. The new product, which is named by B. "*tuberculase*," is a yellow semi-solid mass, does not spoil in transportation and is not very expensive; animals ought to be injected with it several times in from 2–4 weeks. With this product B. has not only treated cows free from tuberculosis, but also those which appeared clinically healthy, yet their milk was contaminated with tubercle bacilli. During the treatment of these cows the bacilli disappeared from the milk.

This observation suggests the hope that it will be possible to apply this product successfully against human tuberculosis. On cows, however, which would suggest an infection similar to that of human tuberculosis, this material has not yet been experimented on; therefore the above described hopes are not yet based on experimental results. Notwithstanding, B. is of the belief that the material will be a success; while he does not believe that it will effect cures in severe affections of human tuberculosis, but in cases of young people, applied at an early stage, it will prevent the extending of the tubercular process, so that with the aid of nature it will accomplish a cure and consequently it will also prevent new infections. B. will not deliver the material to the public before next fall; his experiments will before long prove their benefit and success, and he is gradually nearing his object to procure milk from cows, with which he will be able to immunize babies against tuberculosis.—*(Allatorvosi Lapok.)*

YOHIMBIN HYDROCHLORICUM (SPIEGEL)—A NEW APHRODISIAC AND A SPECIFIC AGAINST IMPOTENCE [*H. Holterbach*].—The bark of the yohimbehe tree was for the first time brought to Europe in the year of 1895, after some explorers noted in German Kamerun, that the natives prepared of the same through boiling an effectful and harmless aphrodisiac. Its active principle, yohimbin, was discovered two years later by Spiegel. He isolated from the bark two alkaloids; a yellow substance, the yohimbenin, and a white, yohimbin. The yohimbin hydrochloricum appears as white crystals, which are slightly soluble in cold water, but very soluble in distilled hot water. In the form of tablets the drug remains unchanged, while the solution is very unstable. At the Animal Physiological Laboratory of the Agricultural Institute of Berlin the first experiments were carried out to study its medical properties. The following was established: 1. The different species of animals reacted in different ways to yohimbin. 2. When administered in small doses the only result noticeable was a very pronounced effect on the genitals, an action peculiar to yohimbin only. 3. Bad effects of any kind could not be noticed, and are positively excluded. The action was general and local. The former manifested itself in increased liveliness of the animals, which after increasing the dose, reached a state of very great excitement. The local action manifested itself in a moderate hyperæmia of the mucous membranes; in rabbits the ears, in dogs the muzzle

were of a brighter red, and warmer, due to a dilatation of the bloodvessels. The astonishing changes were noticed on the genital apparatus. The testicles swelled in a few minutes, sometimes immediately, and remained in that condition for about one hour. The effect on the penis appeared shortly after; in the dog it became reddened, swelled easily, and passed into a very strong erection. It is remarkable that an injection of yohimbin into castrated dogs was also followed by erectio penis, the same way as in uncastrated dogs. Consequently the cause of the erection must lie in direct irritation of the erection centre. The hyperæmia of the genitals lasts generally for a few hours, then disappears gradually (with it also the erection) without leaving any after effects. Notwithstanding daily injections, lasting for four weeks, of yohimbin, no bad after effects were noticed on animals; in the same way no inflammatory changes on the genitals. Yohimbin in large doses, however, acts poisonous on respiration and heart's action; the blood pressure falls constantly from the moment of injection, the pulse beats decrease correspondingly in number. Therapeutically the preparation is especially adapted for the treatment of impotence in males, of which the principal cause is generally neurasthenia. The author has successfully treated with yohimbin animals which suffered from nervous impotence, considering in this class all such cases in which after a very careful examination no cause could be detected; especially in bulls and stallions he has many good results recorded. An accurate determination of the dose in proportion to weight has not yet been established. The author recommends on his experience the following doses: Dog, 0.002–0.005 gm. 3 times daily; hog, 0.05, 3-5 times daily; bull, 0.1–0.3, 3-5 times daily; stallion, 0.1, 3 times daily. The preparation can be administered subcutaneously or per os.—*(Deutsch. Tier. Wochenschr.)*

THE TREATMENT OF SPAVIN WITH PERFORATING FIRING WITH FRÖHNER'S KNOWN METHOD.—Eighteen cases of spavins were treated recently in the German Army. From these 11 recovered, 5 improved, while in 2 the treatment brought no results. With Hoffmann's method 7 cases were treated, of which 4 recovered and 3 improved. The following 2 cases are noteworthy: In one, eight days following the firing an amber-colored yellow discharge ran from the highest perforating canal; after two weeks a fluctuating swelling appeared on the outside of the hock, from which about two tablespoonfuls of pus were removed; following this 30 gm. of Lugol's solution were inject-

ed into the abscess, after which complete recovery took place. In the other case, 13 punctures were made 1 cm. apart on the spavin; six days afterward the skin, which was painted with ichthyol-collodium, sloughed off. The wound healed in four weeks and after eight weeks not a trace of the lameness could be noticed.—*(Allatorvosi Lapok.)*

MORPHIUM ANÆSTHESIA.—Rosenbaum recommends in larger (healthy) horses for the purpose of anæsthesia larger doses of morphium; before castration he injects 1 gm., in treating prolapse uteri 1.5 g. of morphium, and the excitement and straining cease.—*(Allatorvosi Lapok.)*

Indexed.

GERMAN REVIEW.

By J. P. O'LEARY, D. V. S., Bureau of Animal Industry, Buffalo, N. Y.

CALVING FEVER (PARTURIENT FEVER) [*Kreistierärzt David*].—D. has been occupied with the study of parturient fever and its origin. This skilful practitioner, who died several months ago, conjointly with his assistant Karnetzky, made accurate notes of the symptoms, temperature, success or failure of the treatment; likewise of atmospheric and dietetic conditions of the animals. His reports are extremely interesting and deserve full consideration. They are reported *verbatim* as follows: "We have come to certain important conclusions other than those usually given in the text-books. Before all, we are not satisfied with the theory which tells us that the etiology of the disease is based upon the formation of toxines, whether they originate in the udder or uterus; particularly since the use of the air treatment. That theory concerning the etiology of a disease is doubtless the best by which enforced explanations may be given. Dr. Arnsohn was first to express the thought that parturient paralysis was due to an arterial anæmia of the brain, induced by a forcible diversion of blood to the udder. This purely physical theory, which was not elaborated by the originator, we consider an important one according to our observations. By means of this theory all the symptoms of parturient fever can be easily explained, surely more easily than by any other chemical, bacteriological or physical theory which has been advanced thus far. We shall try, therefore, to substantiate this purely physical theory. Thomassen (quoted according to Franck's Obstetrics) has arranged the following five questions,

which any theory of parturient paresis must answer: (1) Why this disease is present exclusively in cattle? (2) Why in later life (that is, after the birth of the third calf)? (3) Why in good milch cows which have calved easily? (4) Why this disease appears at least 48 hours before or after calving? (5) Why this disease develops suddenly and also disappears rapidly? If an intense congestion of one organ (the udder) in this case, produces anæmia of another organ (the brain), the udder must have possessed in the first place a prodigious receptive faculty for blood. This faculty is present among all our domesticated animals only in the udder of cows and especially in the udder of good milch cows. Young cows as a rule give less milk than older ones. Usually the highest point of milk production in most cows does not take place until they have calved at least three times. The function of the udder and the congestion of that organ is at its maximum 36 to 72 hours after calving. Thus questions 1 to 4 are decided—only with regard to question 4 it may be further said that according to our experience milk fever occurs only before calving when the animal has acquired an udder teeming with rich milk and usually if the owner upon those grounds permits the milking of the cow before calving. The conditions which usually appear after calving were therefore present before calving. The congestion of the udder present at this time, increased by the irritation of milking, becomes greater and greater, and consequent anæmia of the other organs resulting affects most the highest lying organ in the erect animal, namely, the brain. The question as to why it is that only animals having an easy birth are victims of the disease, is explained as follows: In cases of difficult parturition the act is tardy; it brings a continuous flow of blood to the genital tract, which is not the case in easy and rapid births. Further, we must consider, that with difficult parturition there is a physiological disturbance in the functions of the other organs of the body; also of the mammary gland. Consequently the formation of milk is not so great; also the blood diversion is not necessitated. We must bear in mind the close connection between the digestive apparatus and milk production. It happens frequently, that through simple indigestion, the milk production of the animal may be essentially diminished. According to our opinion, no theory can explain question 5 as satisfactorily as the one we have been discussing, and we maintain that the well-known Schmidt–Kolding toxine theory is completely overthrown. The mammary gland at the maximum of its activity

necessitates a vast supply of blood. At this time we have no scientific investigations regarding the quantity of blood; particularly when we are discussing animals; for example, cows with parturient fever which have been dry for some time and consequently the blood flow to the udder has been slight. There takes place a complete reversal in the conditions of the circulation, namely in the sudden and rapid milk secretion, that a physical balance does not take place. The animal becomes paralyzed. If the disturbance of the circulation became balanced by repelling the flow of blood, through infusion of water or better pumping in of air or in rare cases spontaneously. The anæmic brain as a result of oxygen regains its function and excepting slight debilitating morbific influences remain until those latter symptoms also disappear. For the reason that through the infusion of clear water or air into the udder of animals often has the same embarrassing result as through means of the infusion of potassium iodide solution, proves according to my idea that not the toxine theory but the physical theory we have been discussing is the correct one. The relater further states that he frequently missed the subnormal temperature which has been mentioned by most recent observers as characteristic. In only four out of 59 cases the temperature was less than 37.3 C. In the remaining cases the temperature varied between 37.3 C and 38.8 C. D. agrees with the observations of older veterinarians that cold is a predisposing factor and because the irritation of cold increases the blood congestion of the udder. D. observed a large number of parturient fever cases after atmospheric changes, with consequent falling of the barometer.—*(Veroff aus den Jahres-Veterinar-Berichten der beamteten Tierärzte Preussens für das Jahr 1903. II Teil. S. 32–35.)*

CONCERNING FIXED AND FLOATING MEMBRANES IN THE VITREOUS HUMOR OF THE HORSE'S EYE [*Dr. Theodor Schmidt*]. —S. occasionally inspected large stables of horses on account of moonblindness. He found between 10 and 15 per cent. of all the horses inspected affected with fixed and floating membranes of varying sizes in the vitreous humor. In two cases only out of about one hundred he could detect these membranes by the aid of the ophthalmoscope; in the remainder, however, it necessitates a special method of examination. This was accomplished by means of the Priestly-Smith lamp. The light is thrown into the eye as much as possible perpendicularly to the vertex of the cornea. At the same time the lens of the lamp must be held at a distance 35 to 45 mm. from the cornea, and the head of the

observer must be close to the lamp. It needs first some practice until the eye of the observer has accommodated itself to the vitreous humor of the horse's eye; for it is apparently always directed first on the cornea or papillary plane. When one has acquired the necessary practice, it is very easy to recognize the delicate thin grayish-white web-like formations suspended in the vitreous humor; stretched curtain-like antero-posteriorly or appearing only in suspended threads and floating membranes. Many of the membranes seem as if studded with little crystals, others appear to be woven into thicker threads which cross one another and at the point of intersection exhibit little bodies resembling particles of meal. These membranes are found in horses which have suffered from moonblindness, also in those animals which have never been attacked with an internal inflammation of the eyes. According to the observations of S., however, it is most frequent in horses between the ages of 6 and 14 years. Visual disturbance could not be traced to these membranes; concerning their nature and significance, there is yet no light on the subject. Possibly one has to deal with pathological growths which reflect themselves on the fibril and fibril-nets found normally in the vitreous humor.—(*Monatshefte fur Prak. Tierheilkunde, XVII, 3/4 heft, S. 166.)*

Dr. J. H. McNeil, of Ames, Iowa, made a trip to New Orleans, La., in March.

Drs. L. A. and Edward Merillat, Chicago, Ill., have been selected by the Chicago Live Stock Exchange as its veterinary advisors.

An Old Timer's Experience of Veterinary Surgery.—In the early days of Manitoba, Treasurer W. F. Thomas of Melita, Man., had a painful adventure which is detailed as follows in a recent issue of the Hartney *Star:* While duck shooting the accidental discharge of his gun badly fractured one of his arms and as no medical aid could be secured mortification of the injured member had commenced when Mr. Dann, a veterinary surgeon (now of Deloraine), looking for land, happened to call at the shanty. This gentleman with more than ordinary skill and with no other instruments than a sharp knife and a hand-saw proceeded to cut off the injured arm. The operation was exceedingly painful as no chloroform could be obtained to deaden the pain. Mr. Thomas made a good recovery, the operation being performed over twenty-five years ago, and has since filled his place in the community with honor to himself.

CORRESPONDENCE.

IMMUNIZATION OF CATTLE AGAINST TUBERCULOSIS.

Extract from an Article by PROF. DR. ROBERT KOCH, PROF. DR. W. SCHÜTZ, PROF. DR. L. NEUFELD AND DR. H. MIESSNER.

(A report of work conducted in the Institute for Infectious Diseases in Berlin and in the Pathological Institute in the Veterinary High School in Berlin. From the *Zeitschrift fur Hygiene und Infectionskrankheiten*, Vol. 51, No. 2.)

"Von Behring, in company with his colleagues Römer and Ruppel, has reported upon a considerable number of experiments that they have carried on for the purpose of immunizing cattle against tuberculosis, and, from the results obtained, he recommends a method for the practical immunization of cattle by intravenous injections with a certain strain of human tubercle bacilli (Culture I). The plan relates to the immunization of calves but a few months old, for the purpose of gradually developing a herd free from tuberculosis. As to the method employed, von Behring at first recommended, provisionally, the intravenous inoculation of cattle from five to seven months old with his culture in a first dose of 0.001 grm. and, after four weeks, with a second injection of 0.025 grm. Later, he recommended a first dose of 0.004 grm. and a second of 0.01 grm. Still later, he recommended the use of the same culture after it had been dried at a low temperature in vacuum; the first dose to consist of 0.004 grm. and the second, which should be given at the earliest 12 weeks after the previous injection, to consist of 0.02 grm. of dried substance. The inoculation shall, as a rule, be applied only to calves of from three to four months of age and only exceptionally to older animals up to two years and then only after they had been tested with a negative result with tuberculin. The vaccine is said to keep in this dried state for one month.

"To this time, von Behring has published no experiments in which an animal has been immunized in accordance with the method he recommends and in which the result of the immunization has been determined by a control inoculation. On the other hand, a number of cattle immunized by him in different ways have undoubtedly possessed sufficient immunity to protect them for a time against tuberculosis inoculations fatal to control animals. Among such animals described in his first report are numbers 8, 10, 11, 16, 17 and 20. It was, however, found upon post-mortem examination that the majority of these cattle were not free from lesions of tuberculosis. In some, indeed, there

were extensive lesions, which may be due in part to the test to which they were subjected with virulent material and in part to the injections that were made during their earlier treatment. All of these cattle, before they were tested with virulent material, were inoculated, either intravenously or subcutaneously, with bovine tuberculous material of low virulence. This is a preliminary treatment that both von Behring and Römer repeatedly say should be entirely excluded in practical work. Most of the above named animals had, beside this, repeated injections of human tubercle bacilli (two had nine such injections). In what way the immunity was obtained in these cases cannot be determined positively.

"The later experiments that are reported by Römer seem to us to furnish even less proof upon the question of immunization, and because proof is lacking to the effect that the culture of bovine tubercle bacilli that he used for testing immunity was sufficiently virulent. On the contrary, a review of his curves shows that bovine tubercle bacilli No. 18, which was used most, did not have high virulence, at least in May, 1903. May 26, 1903, two control cattle were inoculated intravenously with 0.0005 grm. of this culture (in one of these animals it is probable that all of the material did not actually go into the veins), and on the 6th and 13th of October, 1903, these cattle were killed. The findings in the first animal were: In each of four glands one or two nodules from the size of a pin head to that of a grain of millet seed, with few tubercle bacilli; the internal organs free from lesions. The second animal did not at any time show fever and aside from two glands with caseous or calcareous nodules there were in the apex of one lung three calcareous tubercles, each about the size of a grain of millet seed, with a few bacilli. The same culture administered subcutaneously July 5th, 1903, to a control bovine animal in a dose of 0.0025 grm. produced less marked lesions, as was shown when the animal was killed August 29th. Therefore, the cattle that were tested with this culture during the period above referred to, during which the virulence of the culture was being tested, need not necessarily be regarded as having been immunized. Römer reports but one single animal (No. 44) that developed acute, progressive tuberculosis after inoculation with this bovine culture. It was inoculated intravenously in August, 1902, with 0.01 grm. of the culture. This, however, is an animal that had been immunized approximately after the method that von Behring recommends for practice, in that it

had received two injections (0.01 and 0.02 grm.) of Culture I of human tubercle bacilli and, beside these, two injections of the Arloing culture. It became very ill after the injection of bovine tubercle bacilli and when it was killed eight weeks later it was found to have generalized tuberculosis of the lungs. Römer remarks that this failure may be due to the fact that this animal No. 44 (which at the beginning of the experiment weighed 146 kg.) was already too advanced in age. But this explanation does not accord with our own nor with Hutyra's observations.

"As to the second strain of bovine tubercle bacilli (2015) used by von Behring, there is no evidence as to a test of its virulence for cattle. Of course it cannot be expected that for every tuberculosis experiment upon large animals that a control animal shall be sacrificed, but, from time to time, and in connection with every large series of experiments, it is unqualifiedly necessary to establish the virulence of the bovine culture, if the experiments are to be convincing. It must be regarded as strange that Römer recommends a method of immunization upon a basis of experiments in which the few control inoculations that were made resulted negatively.

"In one place, von Behring reports upon five calves, one of which received preliminary treatment with one injection of human tubercle bacilli, Culture I, and the others with several injections with the same culture. All, together with a control animal, were inoculated intravenously with 0.0005 grm. of bovine tubercle bacilli of the strain No. 18, which apparently had been kept in vacuum for twenty-four days. Since the control animal was not fatally infected and since there is no post-mortem report upon this animal, nor upon the five experimental calves, it is not possible to draw conclusions as to any immunity that may have resulted in these cases.

"Von Behring has expressed himself particularly with regard to the use of tubercle bacilli dried in vacuum. Experiments in my own institute show that the herein described protective inoculation with Culture I of human tubercle bacilli produced considerable resistance against following inoculations, but not to the extent that acutely fatal doses of bovine tubercle bacilli are well withstood.

"One can summarize the experiments of von Behring and his fellow workers by saying that they show the possibility of immunizing cattle, but not a satisfactory method of immunization.

"In order to make it possible to obtain an unprejudiced trial, von Behring has sent a number of animals that he has protectively inoculated to other investigators to be tested, but these cattle also were not in any way treated by a method that von Behring recommends for practice. On the contrary, they had received numerous injections of different materials. While, as a result of these experiments, it is quite impossible to draw a conclusion as to the efficiency of the procedure that is recommended for practice, they do not, indeed, in all cases, even show that the animals in question were immunized. On one hand, most of them were not subjected to an infection that was fatal for control cattle; on the other hand, some of the cattle, although they were not tested with highly virulent material, were afterwards found to contain lesions of tuberculosis.

"Lorenz received [from von Behring] two calves, one of which had eight and the other fourteen injections with tuberculous material. The material used by Lorenz for testing the immunity of these animals was of so low virulence that while the control animals inoculated subcutaneously showed moderately intense local reactions, when they were killed only very slight lesions of tuberculosis were found in the internal organs. Moreover, there is no post-mortem report in the two animals that were treated and so, of course, there is no evidence that they were immunized.

"Schlegel subjected to test two cattle immunized in Marburg. One of which (No. 14) had received nine and the other (No. 40) three injections of tuberculous material. In this connection it is especially to be noted that animal number 14 was treated eight times with the culture (I) of human tubercle bacilli that is recommended for practical use. The doses were progressive and varied from 0.005 to 0.4 grm. and were injected into the veins. In the first test both experimental cattle and one control animal were inoculated with a piece of tuberculous gland from a bovine animal. No difference could be observed between the effect upon the experimental cattle and the control animal excepting that the last one became more sensitive to the action of tuberculin, a point upon which Römer lays special weight. But Römer overlooks the possibility that the sensitiveness to tuberculin of experimental cattle can be dulled as a result of repeated injections with tuberculous material. Thereafter, these three cattle were inoculated intravenously, together with two additional control cattle, with 0.0005 grm. of bovine tubercle bacilli. This is the case that was referred to above in

which the strain of bovine tubercle bacilli No. 18 showed itself as of such low virulence for control cattle. The previously treated animal No. 14, gradually emaciated; when it was killed about three months later small nodules were found in the mediastinal glands also in one lung and in one kidney, which contained tubercle bacilli. The control animal first mentioned, which had twice received injections of parts of bovine tuberculous lesions, showed numerous nodules in the lungs, kidneys, spleen and in a number of lymphatic glands. The other two control cattle, which had received bovine tubercle bacilli but once, and then in the veins, showed, as already mentioned above, either no lesions or very small lesions in the internal organs. There is as yet no record upon the post-mortem examination of the second animal that had received protective treatment.

"Two cattle were sent to Eber to be tested. One of them (No. 9) had been treated with eight intravenous injections and one intraocular injection; for the purpose of testing its immunity, it was four times inoculated with emulsions of lesions of bovine tuberculosis administered subcutaneously or intravenously. Only the material that was used for the fifth (intravenous) injection (0.01 grm. of a culture of bovine tubercle bacilli) was of sufficient virulence to kill two control cattle after twenty-eight and thirty-eight days respectively. The immunized animal was killed in a highly diseased condition five and three quarter months later and showed numerous caseous nodules in the lungs and kidneys, and also tuberculous basilar meningitis. As to the result of the test of this animal, and of the animal No. 46, Eber says: 'The resistance of the previously treated cattle was not absolute; with sufficiently heavy dosage, both animals became ill as a result of a tuberculous infection.'

"The experiments of Hutyra resulted very much more favorably. Hutyra used in part the original vaccine material of von Behring and also three different fresh cultures of his own of tubercle bacilli of human type. It is to be noted that one of these last named cultures was obtained from a monkey. The experimental calves of Hutyra ranged in age from three and a half to twelve months. Of Behring's vaccine Hutyra injected first, 0.004, second, 0.01 grm. in some cases; in other cases, the second injection consisted of 0.04 grm. Of his own culture, he used 0.005 grm. and 0.025 grm. respectively. The period between vaccinations was about forty days; from the second vac-

cination to the infection the period was from seven to eight weeks. The dose for testing resistance was 0.02 grm. of von Behring's bovine culture No. 18. This was injected in one case subcutaneously, in others intravenously, and its virulence was always tested on control animals. Four of the ten vaccinated cattle were fed the same culture for a period of fourteen days, in addition to being inoculated intravenously. Of the ten vaccinated animals, there was no immunization in one case [treated with von Behring's vaccine], for the animal died of miliary tuberculosis at about the same time as the control animals, that is about five weeks after the infection. After all of the control animals had died of miliary tuberculosis of the lungs, the other cattle were killed after two and a half to three months. None of these animals were entirely free from tuberculosis. On the contrary, there were in all nodules in the internal organs containing tubercle bacilli and in some lymphatic glands. These lesions were in part of rather slight extent; in part they were extensive. It is worthy of remark that the fresh cultures made by the author himself gave distinctly better results than von Behring's original vaccine.

In view of the quantity of infectious material that was used for testing these animals, the virulence of which was regularly controlled, there can be no doubt that these experimental animals of Hutyra, in most part possessed a considerable degree of immunity.

"In addition, Thomassen has published a report, according to which he has succeeded in producing a considerable degree of immunity against bovine tuberculosis in two calves by injecting them intravenously with human tubercle bacilli. When these calves were tested by control injections of bovine tubercle bacilli they showed only slight lesions of tuberculosis in the lungs, while the control calf inoculated at the same time, with the same quantity of bovine tubercle bacilli, died of generalized tuberculosis at the end of nineteen days. Thomassen immunized a second animal by intraocular injection. This experimental calf was free from tuberculosis.

"A year before this, Pearson and Gilliland had had good success in immunizing two calves. They treated two calves for a period of two months by intravenous injections of human tubercle bacilli in increasing doses until, altogether, the calves had received 0.16 grm. At the end of another period of two months, both experimental calves and two control calves were given an injection of bovine tubercle bacilli into the trachea.

At the end of a further period of two months, all the calves were killed. Upon post-mortem examination it was found that the experimental calves were free from tuberculosis, while the control calves showed numerous lesions in the lungs and in many lymphatic glands." * * *

* * *

To the above, it should be added that the authors have made many experiments of their own, described at length in their paper, which show that they have used a system for protecting cattle against tuberculosis by vaccinating them with a fresh, moist vaccine different from that of von Behring and essentially the same as that used for several years in the work of the Pennsylvania State Livestock Sanitary Board. The results of their work are most encouraging and go far to confirm the work of others to the effect that the fresh, moist vaccine gives a higher degree of immunity and is more effective than the dried and weakened vaccine of von Behring.

* * *

The paper is closed as follows:

"We feel that we are justified in concluding, as a result of these experiments, that the problem of the immunization of cattle against tuberculosis is solved, to the extent that we now know the conditions under which in laboratory experiments animals may with great certainty be protected against large quantities of the most virulent tuberculous material. And we can say, as with regard to other diseases, that even in tuberculosis a true immunity may be produced, the possibility of which was generally doubted a few years ago, and that this may be done by the use of comparatively simple methods and with a high degree of certainty.

"But we must remember that, for the present, this applies only to laboratory experiments.

Although in our cases the infection was severe—probably many times as severe as under natural transmission of the disease—still, the natural conditions are different and one can determine only in practice how the artificially immunized animal will be affected.

"For experiments in practice we advise that protective inoculation shall be carried out in all respects as closely as possible in accordance with the methods that we have found to be most successful in laboratory experiments."

COLUMELLA.

DIPS FOR CATTLE TICKS.

SANTIAGO DE LAS VEGAS, CUBA, March 21, 1906.

Editors American Veterinary Review:

DEAR SIRS:—Cuba in common with other tropical countries is thoroughly infested with the cattle tick, which constitutes the greatest pest that the Cuban cattle grower has to contend with. The Cuban cattle tick (*Boöphilus australis*) is a slightly different variety from the cattle tick of the Southern United States (*B. annulatus*), but is for all practical purposes identical. They transmit the organism of Texas fever as do the cattle ticks of the Southern United States, but this is of relatively small importance to the damage they do as parasites. I have recently visited a ranch where 225 out of 500 recently imported Southern immune cattle died from the parasitic effects of cattle ticks. The cattle were simply "shingled" with them and the owner, who could read English and had consulted a report of the United States Bureau of Animal Industry in which "hand-picking" the ticks was suggested, cast serious reflections upon the intelligence of the author of the referred to bulletin. During the past year we have been devoting a good deal of attention to experimenting with various remedies in order to find a cheap, efficient and easily applied medicine that would destroy cattle ticks without injury to the animal. In our experiments we tried a large number of remedies—practically everything that we could devise or that others could recommend. Among them were various coal tar preparations that are advertised for this purpose, emulsions of kerosene and crude petroleum, solutions of tobacco, etc., but none gave satisfactory results. All the remedies were tested by applying them to tick-infested animals.

Among a great number of remedies tried only three proved efficient in killing the ticks, and are as follows: Cebadilla 1 lb., mixed with *Aguardiente* (a moderately strong alcohol) 5 gallons. The ground cebadilla seed is placed in the alcohol and allowed to stand for two days before using. The medicine is applied by hand washing.

It is a very efficient remedy, kills all ticks and does not injure the cattle. The only objection is its cost. The cebadilla costs about 25 cts. per lb., and the *aguardiente* from 10 to 12 cts. per gallon.

We also tried a variety of crude petroleum, sold under the trade name of "Tickicide," which conforms to the require-

ments of the United States Bureau of Animal Industry in its specific gravity and per cent. of sulphur. This was efficient in killing ticks, but had the following serious objections: (1) Its cost, about 8 cts. per gallon in Cuba; (2) When treated animals are allowed in a pasture the oil from the cattle taints considerable grass, so cattle will not eat it; (3) The most serious objection of all is its effect upon the cattle. The oil seems to close the pores of the skin and is such a good conductor of heat that, in this climate, the animals suffer greatly from the heat, and if the cattle are not in fair physical condition serious losses are liable to follow.

The remedy which has given us the best results, all things considered, is a solution of arsenic. We first tried the South African dip and then the Australian official dip, both arsenical dips, and both gave us good results; but both had the serious objection, that of boiling a large quantity of the solution for a long time. We modified both the above formulæ into what we call the Cuban dip. This formula can probably be improved upon and we are still working along this line:

Arsenious acid,	8 lbs.
Soda carbonate, cryst.,	24 lbs.
Yellow soap,	24 lbs.
Pine tar,	1 gallon.
Water,	500 gallons.

Dissolve the arsenic in 20 gallons or more of water by boiling for thirty or forty minutes. When dissolved add to 100 gallons of water. Dissolve the soap and soda in 20 gallons of boiling water, first shaving the soap, and while boiling add the pine tar in a thin stream and stir until it is dissolved. Mix this with the arsenical solution and add sufficient water to make 500 gallons.

We have used this solution as a hand dressing and by applying with a spray pump with excellent results. We have not had an opportunity to use it in a dipping vat.

This solution kills the ticks and does not irritate the cattle, but it does cause some irritation to the thin skin of the arms of men who work in the solution for more than two days.

I understand the United States Bureau of Animal Industry have tested some arsenical dips, but seem to have abandoned their use in favor of Beaumont crude petroleum. The arsenical dips are successfully used in South Africa and the official dip of Australia is an arsenical solution. A government commission in Uruguay, appointed to test various proprietary remedies,

recommended the arsenical dips above all others. The Cuban dip can be made here for less than one cent per gallon for cost of materials.

I should be glad if any veterinarians in the Southern States would try this solution and report upon it. N. S. MAYO.

THAT CANADIAN DIPLOMA MILL—CORRESPONDENCE WHICH EXPLAINS ITSELF.

MEMPHIS, MO., March 31, 1906.

Editors American Veterinary Review:

DEAR SIRS:—The veterinary law lately enacted in our State is causing some of the "hoss doctors" no little concern, as the enclosed application will show. As this is a rare specimen, I thought it would be of interest to the profession. Yours truly, E. BRAINERD, D. V. S.

"Jan. 8, 1906. Dr. Brainerd, V. S., Dear Sir: i understand that you as assistant State veternary if so of Mo. i would Like to Have a Permit to Practis as i Have Bin in Veternary Practis in Clark Co. for 15 years and Have diploma under Kanada. Kaldeg will you Pleas inform me about the matter. This School was enterd according to act of Congress in the year of 1896 By J. E. Hodgins and T. Hasket in Libraran of Congress at Washington D. C. Will you give me some advise about the matter as i Have severl Patrons on Hands i will come up and see you. Resp. — — —

"P. S. Please tell me if Diploma From this school is all Right in U. S."

OBITUARY.

DR. CONSTANT LAKE, PORTSMOUTH, OHIO,

a graduate of Ontario Veterinary College, and member of the Ohio State Veterinary Medical Association, died suddenly and unexpectedly at 1 o'clock on the morning of March 15. His death was not only a great shock to the family, but to his many friends as well, few of whom even knew he was ill. He had taken cold and went to bed, but his illness was not thought serious. He expired without even awakening the family.

Dr. Lake was born in Wooster, Ohio, in 1849. He was a good citizen, led an exemplary life and will be missed.

W. H. GRIBBLE.

ARMY VETERINARY DEPARTMENT.

SCHOOL OF APPLICATION, U. S. ARMY.

ENLISTED MEN OF THE CAVALRY, FIELD ARTILLERY AND ENGINEER CORPS TRAINING SCHOOL FOR HORSESHOERS.

The United States Army applies the proper term horseshoer to the "smithy," while farrier, relating to iron, covers a multitude; the name is still employed among foreign armies to the enlisted men found at the forge. Our farrier truly represents the stable orderly, or in many instances the stable sergeant, a non-commissioned officer, who is directly responsible to the organization commander for all horses under his supervision.

The school for horseshoers was established during the infancy of this school with the same object in view, to have a constant and sufficient number of available competent men on hand for this important purpose of shoeing horses in the different branches of the service.

Instructors in Charge.—Director of School, Captain of Cavalry; Senior Instructor, a veterinarian, civilian, practical horseshoer and a graduate of Harvard University, Veterinary Department; one civilian, practical horseshoer; one enlisted man, chosen by reason of his proficiency in the art of shoeing and a former graduate of this school.

The Pupils Chosen for this Course.—The class numbers about fifty-five men. As with farriers, men of good character, intelligent, able-bodied and well developed muscularly, are chosen by their respective organization commanders, one man each term, men who may possibly have been engaged in this work previous to entering the Army service. As practice perfects, a green man, if willing and able, soon learns to do good work, even though he may be slow at first.

As all Cavalry and Artillery horses are shod monthly, the smith in each organization divides the work in such a manner as to render the shoeing of several horses daily. He becomes thoroughly familiar with the condition of the foot of each and every horse before him and it is seldom that trouble arises, producing lameness, since trained men from this school have been employed in this work.

It is interesting to note the requests from many old enlisted men, horseshoers in the service, who wish to take this course.

Theoretical Work.—A concise, practical and intelligent text-

book, compiled by the profession, is followed, one hour daily being devoted to recitation, with the senior instructor in charge. The anatomy and physiology of the entire foot is carefully and thoroughly taught.

The horseshoer's tools and their uses are also taken up, every man becoming familiar with the name and usage of each; the forge and economic use of fuel, heating of iron and steel, are subjects carefully taught.

Practical Work at the Forge.—Several hours daily are devoted to the work on the floor of the large school shop. The supply of horses on hand being sufficient, no trouble is experienced in selecting good and fit subjects for the beginner.

Considerable time is spent in the preparation of the sound hoof; the art of modeling a shoe after a pattern follows, then the application of a plain shoe.

In the Army, conditions permitting, all horses are shod with a plain shoe, without calks of either kind.

Later calked shoes are made, their application taught, the subject of gaits entered into, confirmed or corrected by use of special shoes.

Pathological Shoeing.—This subject is later taken up; sore feet, corns, side-bones, quarter-cracks, etc., are provided for; horses that have developed faulty hoofs after several years of valuable service, are, in many instances, rendered further useful by the careful application of properly made, special shoes.

Methods of restraint among refractory horses and mules are also taught and in many cases these animals are permanently subdued in a humane manner.

The system employed has worked admirably; the Army secures a large number of efficient horseshoers, and to those men who leave the service at the expiration of enlistment, it affords a means of livelihood. Among sound feet, with intelligent and competent horseshoers, the shoe will eventually not be a necessary evil.

The Director.—He is an officer of the mounted service, a thorough and true equestrian in every sense, having been selected by the War Department for this purpose by virtue of exceptional qualifications possessed, a true lover of the horse, an intelligent understanding and an inherent disposition to cultivate the close relation of each and every animal presented; this, with a general knowledge of breeding and husbandry, the selection of horses for mounted and traction purposes, especially fits him for the important position he occupies.

The efforts of this officer, Captain W. C. Short, 13th U. S. Cavalry, are constantly enlisted in behalf of the veterinarian.

L. E. WILLYOUNG,
Veterinarian Artillery Corps.

* * *

PERSONAL NOTES.

VETERINARIANS LUSK AND ENGLISH, 2d Cav., recently arrived in the States from the Philippines, after a two-years' tour of duty. Veterinarian Lusk takes station at Fort Assinniboine, Mont., and Veterinarian English goes to Fort Snelling, Minn.

DR. CHARLES A. RAPP, Veterinarian 3d Cav., resigned from the Army on Feb. 15. His reasons for severing his connection with the service were that he could see no future for the Army veterinarian.

VETERINARIAN DEAD.—*Seattle, Wash., April 16.*—Henry N. Couden, a veterinarian in the United States Army and son of the Rev. Henry N. Couden, the blind chaplain of the National House of Representatives, died to-day. He was stricken with heart disease while riding back to Fort Lawton last evening and rolled off his horse, suffering a fracture of the spinal column. Dr. Couden only recently graduated from a college of veterinary surgery in Chicago.—(*Kansas City Times and Star.*) [There is no record of this veterinarian being in the service of the U. S. Army (Regular).—L. E. W.]

DR. CLAUDE H. CASE, of Akron, Ohio, has just recovered from a three-months illness due to an infection of the bone, involving the radius and ulna above the wrist, which very much resembled tuberculosis. It started after testing a herd of cattle (out of which six reacted to tuberculin) and the holding of post-mortems on two of the most advanced cases. The removal of a part of the bone is gradually bringing about recovery.

DR. VERANUS A. MOORE, of the New York State Veterinary College, will address the members of the Veterinary Medical Association of New York County at their May meeting on "The Agglutination Method for the Diagnosis of Glanders." His address will be in the nature of a preliminary statement of the method now in use and the results being obtained. He purposes presenting a paper on the subject at the August meeting of the A. V. M. A., and our readers are promised the full text of Dr. Moore's report.

COLLEGE COMMENCEMENTS.

ONTARIO VETERINARY COLLEGE.

At the closing exercises of this school, March 29, the following received diplomas:

Cecil Scott Anderson, Waterford, Ont.; Herbert Anderson, New York City; Artie B. Angell, Taneytown, Md., U. S.; Stewart W. Armitage, Manitou, Man.; George S. Arnett, Knowlesville, N. Y., U. S.; Howard B. Atkinson, Edgeley, Ont.; J. S. Atkinson, Marinette, Wis., U. S.; Charles E. Attale, Port of Spain, Trinidad, B. W. I.; W. H. Barrett, Port Dover, Ont.; John P. Beck, Cavetown, Md., U. S.; Alder A. Black, Searltown P. E. I.; James Scott Bone, Paisley, Ont.; Harry H. Berry, Brantford, Ont.; Howard B. Brady, Millersville, Pa, U. S.; John F. Bracy, Rockwood, Ont.; Frank T. Burnett, New York City, U. S.; Van. V. Botkin, Muncie, Ind., U. S.; John G. Buie, Michel, B. C.; Frederick T. Cairns, Forest, Ont.; John L. Carolan, Dobbs Ferry, N. Y., U. S.; Earl H. Carter, Toledo, Ohio, U. S.; Charles M. Casey, Syracuse, N. Y., U. S.; Edwin B. W. Cavell, Howell, Mich., U. S.; Francoise de F. .L Chaumont, Oak River, Man.; Victor V. Christie, Island Brook, P. Q.; R. E. Christopher, Armstrong, Iowa, U. S.; Donald L. Clark, Delhi, N. Y., U. S.; James Fielding Cottrill, London, Eng.; Thomas F. Craig, Niagara Falls, N. Y., U. S.; Glenn W. Cronkite, Alma, Mich., U. S.; Volney Manning Curry, Leslie, Mich., U. S.; Daniel J. Cronin, Chelsea, Mass., U. S.; E. Beverley Cowan, Orono, Ont.; J. Graham Davidson, Niagara Falls, Ont.; Amos H. Dyson, Jamestown, N. Y., U. S.; C. Edgar Edgett, Moncton, N. B.; John A. Espindola, La Plata, Argentina; Col. E. Edmunds, Ardsley, N. Y., U. S.; Wm. Austin Ferr, Put-in-Bay, Ohio, U. S.; Louis P. Foss, Cincinnati, Ohio, U. S.; Royal G. Flowers, Lyndonville, N. Y., U. S.; A. Scott Gebbie, Howick, P. Q.; George H. Gerlach, Elmore, Ohio, U. S.; Eugene L. Hannon, Pittsfield, Mass., U. S.; Charles Edward Hayes, West Shefford, P. Q.; Charles Head, Buffalo, N. Y., U. S.; A. Frank Hill, St. Johnsbury, Vt., U. S.; Arthur D. Howden, St. Louis Station, P. Q.; Aubrey G. Husband, Wawanesa, Man.; Frederick Hutchinson, Cheltenham, Ont.; Joseph Johnson, Stoughton, Wis., U. S.; Chas. A. Joynt, North Augusta, Ont.; James Jones, New Liskeard, Ont.; Robert Kenwell, Mount Eaton, Ohio, U. S.; Henry F. Kirkby, Walton, Ont.; Judson Kellogg, Ripon, Wis., U. S.; Thos. J. Kain, Totten-

ham, Ont.; R. Harry Leadley, Cookstown, Ont.; W. H. Tulloch Lee, Boissevain, Man.; Beverley M. Leigh, Columbus, Miss., U. S.; C. Douglas MacCormack, Jamaica, B. W. I.; Alexander McFadzean, Waldemar, Ont.; Walter H. McKenzie, Oakville, Man.; Donald McMillan, St. Louis de Gongagne, P. Q.; Charles H. McNab, Rosemont, Ont.; C. O. Maconachie, Guelph, Ont.; Wm. Frank Madill, Orillia, Ont.; Stanley Thomas Martin, Winnipeg, Man.; C. Ernest Miller, Peru, Ind., U. S.; Earl W. Miller, Rockford, Ohio, U. S.; John Joseph Montgomery Brantford, Ont.; C. A. Minshall, Verogua, Wis., U. S.; Milton E. Muma, Arkona, Ont.; Achibald S. Miller, East Aurora, N. Y., U. S.; William H. Moffatt, Picton, Ont.; Reginald Edward Murray, Cooksville, Ont.; William G. Moore, Petrolia, Ont.; Maynard S. Nighbert, Pittsfield, Ill., U. S.; William T. Patton, Paris, Ont.; Harry W. Pegg, Holland Landing, Ont.; William Reid, Nassagaweya, Ont.; James Marshall Reilly, Rupert, P. Q.; John Martin Rice, Salhouse, Norfolk, Eng.; Charles D. Ritter, Allentown, Pa., U. S.; Albert B. Ritter, Pennsburg, Pa., U. S.; Abram W. River, Cresco, Iowa, U. S.; George Avery Root, Milville, N. Y., U. S.; Charles W. Ruttan, Wingham, Ont.; Henry W. Sheurer, Brighton, Ill., U. S.; Earle F. Schofield, Greenwich, Conn., U. S.; William F. Sirett, Glendale, Man.; Clarence D. Smith, Justus, Ohio, U. S.; William Cyril Steele, Grenada, B. W. I.; Clark E. Swail, Randboro, Que.; Herbert R. Sharp, Moosomin, Sask.; D. Crozier Tennent, London, Ont.; John A. Thomas, Shreve, Ohio, U. S.; Thomas Thompson, Oakdale, Ont.; Hosea B. Turney, Marysville, Ohio, U. S.; George S. Thorneywill, Charlottsville, Va., U. S.; Samuel S. Westgate, Pickering, Ont.; Andrew Fenwick Wilson, Portage La Prairie, Man.; A. Newton Wilson, Howick, P. Q.

The gold medal for the best general examination, donated by the Ontario Veterinary Association, was won by C. E. Attale, of Port au Spain, Trinidad.

GRAND RAPIDS VETERINARY COLLEGE.

The exercises were held in the College Auditorium on Thursday evening, March 29, and the following received diplomas:

Arntz, Wm., Sheridan, Mich.; Brown, J. R., E. Boston, Mass.; Bucher, C., Whitehouse, Ohio; Bordner, L. A., So-Wayne, Wis.; Byrnes, M. R., Friend, Nebr.; Burke, E., Cal.

cutta, India; Compton, A. L., Morrice, Mich.; Coomer, W. E., Bay City, Mich.; Corkill, Jos., Mauch Chunk, Pa.; Craig, D. S., Hanover, Ont.; Cash, G. B., Fremont, Mich.; Carr, Jas. F., Muskegon, Mich.; Dunning, Glenn, Emmett, Mich.; Draper, J. P., Camlachie, Ont.; Eiler, F., Chapin, Ill.; Edwards, W. C., Cambria, Wis.; Elzinga, H., Grand Rapids, Mich.; Fitzpatrick, Wm., Mt. Holly, N. J.; Fitzwater, M. C., Canton, Pa.; Gahagan, W. H., Porter, Pa.; Glass, B. F., Prophetstown, Ill.; Hutson, E. J., Webberville, Mich.; Hobart, Geo. R., Ithaca, Mich.; Hansen, J. W. G., Sheridan, Mich.; Hostetter, H., Topeka, Ind.; Kells, R. E., Arthur, Ont.; Knox, H., Picton, Ont.; Livengood, A. G., Elk Lick, Pa.; Leary, D. H., Darlington, Wis.; Law, J. J., Nashville, Mich.; Life, N. L., Jane Lew, W. Va.; Menold, G. J.; Thompsonvile, Mich.; McBreen, P. L., Mahonoy, City, Pa.; Morel, Jules F., Mons, Belgium; Moyle, Isaac, Waterford, Wis., Monroe, H., Ilion, N. Y.; McMasters, J., Key, Ohio; Marble, F. E., Indian Falls, N. Y.; Miller, J. M., Avilla, Ind.; Ocobock, C. F., Paw Paw, Mich.; Peterson, L., Carl, Mich.; Parks, J. L., Ft. Fairfield Me.; Pearson, Geo., Pickney, Mich.; Rock, J. F., Marinette, Wis.; Ramsey, Roy, Pierson, Mich.; Roseberry, F. M., Marion, Ohio; Rommeck, W., Detroit, Mich.; Stevens, H. L., Farmington, Me.; Scoville, Glenn, Clarksville, Mich.; Scherz, F. J., Rice Lake, Wis.; Sauer, Aug., Grand Rapids, Mich.; Snyder, E. D., New London, Ohio; Smith, W., Lehighton, Pa.; Timms, J. M., Pittsford, Mich.; Whitney, J. G., Union Grove, N. Y.; Walters, Ezra, Carleton, Mich.; Wilson, R. H., Toronto, Ont.; Woolston, Chas., Bauer, Mich.; Zimmerman, Israel, Bridgeport, Conn.

UNITED STATES COLLEGE OF VETERINARY SURGEONS.

At the twelfth annual exercises of this college fellowship degrees, in recognition of research work in veterinary science and valuable contributions to the literature of the profession, were conferred upon Charles F. Dawson, M. D., D. V. S., State Veterinarian of Florida; James G. Ferneyhough, B. S., D. V. S., State Veterinarian of Virginia, and Robert W. Summers, D. V. S., a professor in the college.

The graduates were: John R. Aufente, Illinois; William Francis Davis, Maryland; Robert Henry Duenner, Tennessee; Charles Jefferson Frey, New York; Oscar Harry Gratz, Penn-

sylvania; John Philip Kiefer, District of Columbia; William S. Pollard, Massachusetts; Mann Page Smith, Virginia; Clarence Clayton Walker, A. B., M. D., District of Columbia; Cornelius Campbell Weeks, Illinois, and Eddie Powell Yager, Virginia.

McKILLIP VETERINARY COLLEGE.

After the annual banquet, which was attended by professors, students and friends of the college, the commencement exercises were held in Handel Hall. The degree of M.D.V. was conferred upon the following:—S. T. P. Nichol, E. P. Johnson, D. C. Treloar, H. H. Halverson, C. H. Mainhart, F. W. Morgan, E. J. Cunningham, E. E. McDaniels, G. W. Neff, A. R. McBurney, B. E. Sherman, H. N. Thompson, O. E. Lindburg, F. P. St. Clair, F. J. Verduin, C. F. Blair, J. O. Fenstermacher, H. N. Couden, W. Meiser, T. B. Harries, M. Guillaume, J. E. Standsbury, J. W. Haffer, B. F. Hudson, G. H. Peters, C. L. Lumby, G. F. Flaherty, W. F. Miller, J. W. McLaughlin, G. A. Barnes, E. J. Peck, O. L. Prien, P. W. Flickinger, W. Hilton, S. Robinson, E. L. Knight, A. C. Stoltzman, J. M. Mulick, E. S. Hess, C. Muth, O. J. Matthias, C. H. Schultz, C. B. Estey, F. L. Skrable, J. F. Mack, M. Vanderhack, E. B. Shaw, C. W. Lassen, H. G. Thompson, L. A. Wilson, R. D. Mankin.

INDIANA VETERINARY COLLEGE.

The fourteenth annual commencement of this college was held March 30, 1906, at 'Das Deutsche Haus,' Indianapolis. Diplomas were granted the following: Howard Danner, Indianapolis; Frank J. Douglass, Indianapolis; Byron Eckols, Indianapolis; William H. Heaton, Nora, Ind.; Ora W. Hiner, Butler, Ind.; Geo. Charles Kœhnlein, Dwight, Ill.; Stephen G. C. Kelly, Noblesville, Ind.; Jacob B. Kingery, Cutler, Ind.; Benjamin F. Mauck, Owensville, Ind.; Bert Rodibaugh, New Augusta, Ind.

CHARLES WEILAND, owner of Sir Albert S., 2.03¾, says he has discovered a new system of feeding and training, by which he can fit a harness horse for racing with about one-half the work and in one-half the time ordinarily required to get one ready. He feeds a light bran mash with a handful of flaxseed added every day in the early spring, and says it works wonders in hastening the preparation.

SOCIETY MEETINGS.

MISSOURI VALLEY VETERINARY ASSOCIATION.

The semi-annual meeting of this Association was held February 12, 13 and 14, 1906, in the lecture-room of the Kansas City Veterinary College, N. W. cor. 15th Street and Lydia Ave., Kansas City, Mo.

The meeting was called to order at 9.30 A. M., Feb. 12, by President Dr. J. S. Anderson, of Seward, Neb.

This meeting was the largest in point of attendance and proved to be the most interesting of any held in the history of the organization. There were 120 veterinarians and 300 students in attendance. The following is a partial list of the members and visiting veterinarians:

THE ATTENDANCE.

Missouri.—Drs. E. J. Netherton, H. McConnel, F. F. Brown, A. T. Kinsley, S. Stewart, C. E. Steel, E. A. Van Antwerp, R. P. Poage, A. J. Munn, L. Champlain, J. D. Cooper, B. F. Kaupp, G. W. Merker, R. C. Moore, O. J. Phillips, W. E. Martin, L. D. Brown, T. S. Hickman, W. R. Cooper, A. D. Knowles, H. T. Doak, M. A. Peck, R. B. Grimes, J. B. Wood, J. Robards, O. Olson, C. Hubbard, J. H. Slater, W. B. Welch, A. W. James, J. G. Eagle, C. E. Hart, A. Trickett. S. A. Peck, R. L. Allen, J. B. Williams, J. W. Chenowith, H. J. McCartney, B. P. Rainey, F. M. Starr, D. F. Lucky, W. H. Gatchell, A. Byrd, E. M. Hendy, H. Bradley, W. L. West, T. B. Craycroft, Wm. Yenner, C. Conley, L. R. Baker, M. C. Lint, M. A. Sappington, C. M. McFarland, F. N. Elwell, C. H. Bugbee, B. Yenner, O. Stingley, G. E. Butin.

Kansas.—Drs. D. O. Knisley, G. J. Roach, H. S. Maxwell, R. H. Hayes, M. C. Lint, J. C. Young, N. V. Boyce, C. H. Davies, W. E. Flanders, M. C. Campbell, F. W. Roach, W. F. Smith, C. B. McClelland, W. N. Hobbs, C. Saunders, T. W. Hadley, W. T. King, E. H. Kilian, J. Tyler, R. Dill, F. S. Schoenleber, A. T. Jones, C. M. Crandall, X. I. Richmond, F. Jellen, O. M. Norton, E. Biart, C. A. Monney, L. A. Licking, T. C. McCasey, G. Mutziger, C. B. Kerns, W. Saylor, H. Dumbault, W. J. Guilfoil, D. M. Allen, G. M. Fox.

Nebraska.—Drs. J. S. Anderson, H. Jensen, A. T. Peters, P. Simonson, J. D. Sprague, C. A. McKim, E. F. Stewart, D. C. Scott, G. A. Meixel, A. N. Reber, H. T. Hahn, R. A. Huntley, G. W. Smith, F. E. Johnson.

Indian Territory.—Dr. W. J. McAlister.

Oklahoma.—Dr. G. W. Roach.

Iowa.—Drs. F. A. Andrews, H. E. Pinkerton, E. McNair, W. H. Jenkins, S. T. Miller.

NEW MEMBERS.

The following names, duly vouched for and favorably passed upon by the Board of Censors, were elected to membership:

Missouri.—Drs. C. R. Treadway, C. E. Hart, L. Champlain, J. G. Eagle, S. Sheldon, R. P. Poage, E. A. Van Antwerp, C. M. McFarland, E. M. Hendy, L. R. Baker, A. W. James.

Kansas.—Drs. T. C. McCasey, C. B. Kern, F. S. Schoenleber, T. A. Jones, S. M. Regan, H. Dumbault, F. N. Elwell, H. S. Maxwell, J. D. Sprague, E. H. Kilian.

Nebraska.—Drs. E. F. Stewart, C. A. McKim, F. E. Johnson.

PAPERS AND DISCUSSIONS.

The first paper was presented by Dr. Hugh McConnel, of Marshall, Mo., on "Mad Itch in Cattle." The Doctor gave an interesting account of an outbreak designated under the above heading. Some of the symptoms observed were switching the tail, followed by stamping of hind feet and kicking. When released from stanchion would begin biting hind quarters and limbs, particularly the extremities about fetlocks, and also licking various parts of the posterior extremities, viz., udder, about tail, inside hind legs, etc.; would also back up against objects and rub. Red spots on and swelling of the vulva to a moderate degree, also prolapsus of the rectum, occurred in two or three cases within five to ten hours previous to death. The prolapsus did not appear to be from straining. These were symptoms as observed 12 to 18 hours after first taken ill. Later symptoms were those of kicking and biting and general restlessness. Later the animal would get down and unable to rise. The loss of power was first noticed in the hind limbs, then loss of power in the anterior extremities; finally the animal would be unable to rest on the sternum. The temperature ranged from 100 to 102° F. Death usually occurred in two or three days. Post-mortem findings:—Nothing was found abnormal in the various compartments of the stomach, and rumen contained ingesta, among which was found millet seed. A point brought out later in the discussion was that in many of the outbreaks the cattle had been fed millet. Hæmorrhagic spots were noticed the entire length of the large intestines. The vulva was congested, which

was probably due to rubbing, as the reddened parts were only superficial, not extending back to the rectum. There was evidence of intestinal irritation. The subject was thoroughly discussed by Drs. Peters, Netherton, Anderson, Champlain, L. D. Brown, Kinsley and Moore. Among the interesting points brought out were: that many such outbreaks were caused by feeding mouldy feed, especially millet. The question was raised as to whether it was a toxic substance produced by mould. Many such outbreaks have been reported from time to time in the Missouri Valley.

The next paper presented was by Dr. Lloyd Champlain, of Kansas City, Mo., subject, "One Medico-Biological Problem." This paper was very scientific and was greatly appreciated.

Dr. E. A. Van Antwerp presented a paper on "Parturient Paresis." This paper brought out a lengthy discussion Dr. H. Jensen, of Weeping Water, Neb., reported that he had relieved comatosed condition in cattle due to corn-stalk disease by inflation of the udder with oxygen. He also recited an interesting experience he had in making an effort to kill a horse by administering strychnine hypodermically. The weather was 25 degrees below zero; the horse was led out to the timber and 10 grains of sulphate of strychnine were given subcutaneously. In the course of an hour an attendant came and said the horse was not dead. To his surprise upon examination he found the report to be true. Ten grains more were administered in a like manner; the Doctor went home thinking surely the quantity would destroy life. About two weeks later he saw the owner, who told him he had to "knock the horse in the head." The Doctor attributed the extreme cold as combatting the tetanic spasms of the muscles.

Meeting adjourned. Luncheon was served in the Kansas City Veterinary College.

THE CLINIC.

The clinic was called to order at 1 P. M. in the clinic amphitheatre of the Kansas City Veterinary College, under the direction of Dr. F. F. Brown.

Case No. 1.—Resuscitation of Dog (Clinician, Dr. C. E. Steel, St. Joseph, Mo.).—A dog, weighing about 25 pounds, was chloroformed. The anæsthesia was pushed till the animal had apparently ceased the respiratory act. Three drops of 2 per cent. hydrocyanic acid were placed on the tongue and artificial respiration applied. In a very short time the animal gasped for

air, muscular tremor was noted and the dog regained his feet in three minutes' time. The patient showed no ill after-effects as result of drugs. The rule for giving dilute hydrocyanic acid for the purpose of resuscitation is one-eighth drop per pound body weight.

Case No. 2.—Contraction of Flexors of the Metacarpus—Operation, Tenotomy of Flexor Metacarpi Externus and Medius (Operator, Dr. R. C. Moore, Kansas City, Mo.).—A bay gelding was presented at the clinic in which there was a contraction of the flexors of the metacarpus, a condition commonly known as "bucked knee." The operation consisted of subcutaneous tenotomy of the flexor metacarpi externus and medius above where the two tendons blend. The operation was successful in relieving the condition.

Case No. 3.—Stringhalt—Operation, Peroneal Tenotomy (Operator, Dr. R. P. Poage, Shelbina, Mo.).—The animal was operated on in a standing position. A side line and "twitch" were used as means of restraint. The tendon was severed above the theca.

Case No. 4.—Laminitis (Clinician, Dr. Chas. Treadway, Kansas City, Mo.).—The case presented was one that had practically made a recovery. The treatment of the case in the acute stage consisted of pulv. alum in one drachm doses every hour for five days, then one-half this amount for the next twenty days. For the first twenty days ice and bran poultices were kept on his feet, later he was kept in water bath four or five hours a day for two months; in three and a half months he was put to work, apparently recovered so far as usefulness was concerned. A ridge on the horny wall marked the hoof. A slight drop of the os pedis was also present.

Case No. 5.—Results of Quittor Operations (Clinician, Dr. R. C. Moore, Kansas City, Mo.).—Three cases were given to illustrate a talk to be given in the evening. In these three cases the quarters were smooth and apparently in normal condition, as a result of the use of iodoform, oakum and tar bandages—a condition that would not have existed had the usual treatment been followed after the operation.

Case No. 6.—Loco Poisoned Horse (Clinician, Dr. A. T. Peters, Lincoln, Nebr.).—A bay gelding, nine years of age, was presented. The horse showed an unsteady gait when moved, was very nervous; the animal was practically blind. On being exercised the symptoms were more aggravated. The *Astragylus molissimus*, or wolly loco, is a plant that grows 10 to 14

inches high, leaves resemble the leaves of the locust tree (except leaflets are shorter); they grow from a short stem, from which develops the blossom and later the pods which contain the seed. The plant retains a pale green appearance all winter and animals acquire a habit of eating it when the other herbage is scarce. Its poisonous influence is exerted upon the nerve centres.

Case No. 7.—Demonstration of Viscera of Horse (Clinician, Dr. B. F. Kaupp, Kansas City Mo.).—A horse had been previously prepared for the demonstration. The attention of the veterinarians was called to the various organs, in regard to their relation to precipitate a discussion in regard to the value of surgical operations. The development of the maxillary sinuses in various individuals; the relations and location of the velum pendulum palati, pharynx, œsophagus, and bloodvessels and nerves adjacent to them; the position of the heart and its relation to the front leg. The various abdominal organs and relations and also pelvic organs were exposed. By the removal of the gluteal muscles and sacro-sciatic ligament the true relation of the pelvic viscera was seen. By a careful dissection of the abdominal muscles, nerves and bloodvessels supplying the part were demonstrated, and by their partial removal and removal of part of the posterior ribs all abdominal viscera were demonstrated. Likewise the muscles between and covering of the ribs were removed and the lungs inflated by means of a bellows.

Case No. 8.—Demonstration of Post-Mortem Findings (Clinician, Dr. A. T. Kinsley, Kansas City, Mo.). A horse, a gray gelding, eight years old, had been ill two weeks previous to death. Diagnosis, pleuro-pneumonia. Laminitis was a complication, which was observed four days before death. The pleuritic exudate was organized; a portion of ribs showing parietal pleura; also lungs were exhibited; a portion of the left anterior lobe of lung had become degenerated, forming an abscess. The heart also contained an ante-mortem clot, which reached from the left auricle into the aorta.

Case No. 9.—Stomach Tube Demonstration (Clinician, Dr. D. O. Knisley, Topeka, Kansas).— Dr. Knisley demonstrated the passage of the new stomach tube after his own idea. It consisted of a double tube. He preferred passing it through the mouth, using a mouth speculum. In passing the tube, he used the stylet in the tube. After reaching the stomach, the stylet was withdrawn, water was introduced through one compart-

ment and returned through the other one, so that the stomach could be thoroughly cleansed. The doctor also demonstrated a new float, run either by electric motor or hand motor, the latter such as used on clipping machines. The stone was cylindrical and made of carborundun.

Meeting adjourned.

The evening session was called to order at 7.30 P. M. by the President, Dr. J. S. Anderson.

PAPERS AND DISCUSSIONS—CONTINUED.

The first paper presented was on the subject of "Sarcomatosis," by Dr. A. T. Kinsley, of the Pathological Laboratory of the Kansas City Veterinary College. The paper was illustrated by aid of the projection apparatus and reflectoscope. After a discussion of the subject, slides and photos of a few interesting cases observed during the past year were presented. The following is a brief description of these cases:

Case 18.—January 31, 1905. Animal, grade Holstein cow, six years old. History: Cow wandered off to herself, lying down much of the time, emaciation. Symptoms: Temperature 104.2, hypersensitive in right hypochondriac region, constipation, agalactia. Clinical diagnosis: Impaction, complicated with enteritis. Post-mortem: Tumors observed in the abomasum, duodenum, and jejunum. Microscopic diagnosis: Lympho-sarcoma.

Case 27.—March 27, 1905. Animal, bay gelding, seven years old. History: Capricious appetite, emaciation, cough; disease continued for about five weeks. Diagnosis: Suspected glanders. Post-mortem: Nodules in lung. Pathological diagnosis. Small round-celled sarcoma.

Case 30.—March 12, 1905. Animal, horse, aged. History: Growth in eye appeared three months previously: Diagnosis: New growth, probably sarcoma. Pathological diagnosis: Small spindle-celled sarcoma.

Case 39.—May 14, 1905. Animal, aged brown gelding. History: Horse was a private carriage horse and was noticed to tire easily. Symptoms: Venous pulse, increased precordal area, weakness; all of the symptoms became more marked and the horse was destroyed. Diagnosis: Obstructed venous circulation. Autopsy: Extensive new growth involving pericardium, mediastinum and pleura. Diagnosis path.: Small round-celled sarcoma.

Case 45.—August 2, 1905. Animal, aged bay gelding.

History and symptoms: The horse was observed to urinate only with difficulty; loss of flesh and energy; enlargement upon the glans penis; was operated upon; the horse was returned to the hosipital for treatment Nov. 5, 1905, but was considered an unfavorable case and destroyed Nov. 20, 1905. Autopsy: A large area of necrosis was found involving the superior wall of the bladder, also the pelvic flexure of the great colon and local peritonitis. Pathological diagnosis: Sarcoma.

Case 47.—September 1, 1905. Animal, horse. History: Horse was noticed to be unthrifty; was given a few days' rest, but did not improve; sent to hospital and on examination an enlargement was found on left inferior maxilla; the teeth were examined and found to be practically sound; the enlargement was diagnosed a new growth and the horse was destroyed. Autopsy: An enlargement of the left inferior maxilla. The bone being practically all absorbed; the lymphatic glands of the head and cervical region not involved. Pathological diagnosis: Mixed-celled sarcoma.

Case 49.—September 22, 1905. Animal, pointer dog. History: Dog was noticed about July 1st to be less active and was not inclined to eat; these conditions gradually increased until the dog was brought to the hospital. Symptoms: Emaciated, weakness, large abdominal growth, apparently fixed. The tumor involving the gastro-splenic omentum was removed in the clinic and microscopically was found to be a lympho-sarcoma.

Case 52.—October 2, 1905. Animal, dog, black water spaniel. History and symptoms: Dog was noticed to breathe with difficulty and was sent to the hospital for treatment; upon examination an enlargement was found in the nasal chambers and involving the velum pendulum palati; the growths were removed by thermo-cautery, but the dog died in a few days. Pathological diagnosis: Large spindle-celled sarcoma.

Case 54.—May 17, 1905. Animal, gelding, mule, about two years of age. History: About April 1, 1905, a growth was noticed on the eyelid, which gradually increased in size; was removed in May, again in July. Clinical diagnosis: New growth. Microscopical diagnosis: Spindle-celled sarcoma.

Case 65.—October 25, 1905. Animal, mule. History: The mule was purchased in March and at this time a small growth was noticed on the left inferior eyelid; also some roughened areas on the right inferior eyelid; the growths increased in size and the animal was sent to the hospital for treatment;

a portion of growth from left superior eyelid was removed and examined microscopically and was found to be a spindle-celled sarcoma.

Case 66.—November 4, 1905. Animal, cow, five years old. History: Killed at the packing-house and condemned because of an omental spherical growth about 10 inches in diameter, which wasfound microscopically to be a spindle-celled sarcoma.

Case 68.—November 10, 1905. Animal, cow, four years old. History: Killed at the packing-house and the ovary was noticed to be about the size of a basket ball and was found on examination to be an alveolar sarcoma.

Case 70.—December 4, 1905. Animal, draft bay gelding, eight years old. History: Horse was in the hospital July 29, '05, for treatment of what appeared then as "granulated eyelids." December 4, '05, horse returned to hospital with a growth in the subconjunctival tissue of the left superior eyelid. The growth was dissected out and was found to be a small round-celled sarcoma.

Case 73.—December 18, 1905. Animal, hog. History: Killed at packing-house. Autopsy: Mesenteric lymphatics much enlarged, stomach walls thickened, spleen slightly enlarged. Microscopical diagnosis: Lympho-sarcoma.

Case 81.—January 4, 1906. Animal, lamb. History: Sheep killed at packing-house; and an enlargement noticed in pericardial sac. Microscopic diagnosis: Small round-celled sarcoma.

In a summary the Doctor stated that the subject of sarcomatosis was important on account of its prevalence in lower animals. Important in giving diagnosis and prognosis on account of its malignant nature. In 15 cases the following tissue was involved: Lymphatic system, 7; eye and surrounding tissue, 4; lungs, 1; bone, 1; nasal chamber, 1; ovary, 1.

This paper was discussed by Drs. Champlain, S. Stewart, Schoenleber, Jensen, Slater, Moore and others.

Dr. Schoenleber asked if there was any way whereby new growths could be grouped so that the practitioner could upon macroscopic examination say to his client whether or not the malady was curable.

Dr. Kinsley stated that if the growth "creaks" when sectioned by knife he could give a favorable prognosis after removing growth. But if it was soft and the thumb could be pushed through it, as is possible in malignant growth of sarcoma, an unfavorable prognosis may be made. There is no well-defined

line of demarkation between the sarcomatous tissue and that tissue that is healthy. In one horse upon which an autopsy was held the spleen was found to weigh 30 pounds. Upon microscopic examination it was found to be a melano-sarcoma.

Dr. Jensen stated that his method of treatment of new growths of a fibroid nature was to inject in tissue around growth a mixture of oil thuja, ʒi, alcohol, ʒviij. This produces a sloughing, after which was applied a mixture of oil thuja, ʒi, vaseline, ʒxvj. Applied twice a day.

The next paper was presented by Dr. C. McFarland, St. Joseph, Mo., subject, "Psoroptic Scabies of Cattle; Symptoms and Differential Diagnosis." This paper was very thorough and interested all present.

It was followed by one by Dr. W. L. West, of Kansas City; subject, "Heart to Heart Talk." The Doctor in his witty way gave some good advice along business lines, and social conduct of the profession.

Dr. Jensen, Weeping Water, Neb., then gave an interesting talk upon the subject of "Therapeutical Agents: Their Preparation and Uses." The Doctor is a close student of medicines, and their therapeutical application, and is always an interesting talker. Among agents discussed was the use of collargolum, 10c.c. of a 2 per cent. solution, given intravenously in purpura hæmorrhagica. The use of the fluid extract of echinaceæ given in one-ounce doses per orum every two hours in septicæmia. The intravenous injection of 30m. formalin to 60 c. c. water, also recommended for septicæmia. Adrenaline was used with good results in conjunctivitis, and the operation of arytenectomy, but had given unfavorable results in spaying operation, preventing healing by first intention. Campho-phenique may be used as a local anæsthetic and as an antiseptic. It is readily soluble by addition of a little alcohol. In flatulent colic the Doctor preferred using as an antiferment eucamphol ʒi in one pint of water.

The next paper was presented by Dr. D. O. Knisley, of Topeka, Kansas; subject, "Acute Indigestion in the Horse: Its Treatment."

Meeting adjourned.

SECOND DAY—FEB. 13, 1906.

Meeting was called to order at 9 A. M. by President Anderson.

The Secretary read regrets of inability to attend from Drs.

W. D. Hammond, Wayne, Nebraska; M. R. Trumbower, Monett, Mo., and W. Warren, of Sedalia, Mo.

The first paper was presented by Dr. D. F. Lucky; subject, "Plant Poisoning of Cattle." This paper recited the history of an outbreak of a fatal disease among cattle in the southern part of Missouri. The discussion was participated in by Drs. L. D. Brown, Maxwell, Anderson, Peters, McKim, Kaupp, Kinsley, Schoenleber, and others. Dr. Peters in discussing poisoning in cattle by plants stated that in young cane stunted by drouth he had noted fatal results in from 8 to 15 minutes. The cattle apparently died without a struggle. An analysis of some of the plants showed 60 to 80 per cent. prussic acid, the quantity decreasing as plant became larger. It is believed that prussic acid is due to the action of an enzym on a glucocide and that it is held in solution through plant nourishment. As soon as plant life is cut short by harvesting the prussic acid volatilizes and consequently the cured plant has no injurious effect upon animal consuming it. Dr. Lucky discussed the subject of poisoning by crotolaria sagitalis (rattle-box plant). Some of the symptoms noted are: becoming lazy, yawning, standing resting one leg, hip dropped, etc.

Meeting adjourned.

STOCK JUDGING.

At 2 P. M. the veterinarians in attendance assembled in the fine stock pavillion, Kansas City Stock Yards, where a demonstration of cattle judging was given by Prof. W. J. Kennedy, of the Iowa State College. A Shorthorn bull was first presented. A talk upon the value of the animal from beef standpoint was discussed. The various parts in regard to their value upon the block was thoroughly discussed and comparison drawn between the two leading beef breeds, viz., Herefords and Shorthorns. The talk brought out many points of value. The Hereford men are making an effort to breed cattle with heavier loins and hind quarters and with lighter fore quarters.

Meeting adjourned.

LITERARY PROGRAM RESUMED.

7.30 P. M. Meeting called to order by Dr. Anderson. The first paper presented was by Dr. H. T. Hahn, Falls City, Neb. The paper included a report of a case in which a foreign body had entered the thoracic cavity, penetrating the lung tissue. The wound was cleansed and treated with antiseptic precautions. It healed and the animal made a perfect recovery.

Dr. F. M. Starr, Odessa, Mo., presented a paper; subject, "Cattle Poisoned by Fungi on Elders." Some of the symptoms of the cattle poisoned were: Sub-normal temperature, diarrhœa, œdema of sternum, accelerated respiration, pulse scarcely perceptible, nervous, would lie apart from the balance of bunch. The treatment administered was one pound Epsom salts and one ounce pulv. belladonna. No deaths occurred. Discussion was taken part in by Drs. Norton, Lucky, and Knowles.

Dr. W. Warren of Sedalia, Mo., sent his paper on "Quittor," which the Secretary read at this time. The paper was discussed by Drs. S. T. Miller, Moore, and others. Dr. Moore gave an excellent talk upon the methods employed at the Kansas City Veterinary College in treating quittor. After operation, which consists in removing the lateral cartilage and diseased tissue, the parts are sterilized with formalin solution, then mopped dry with aseptic cotton and parts filled with iodoform. Some oakum, which is filtrated with iodoform, is placed over the wound, then firmly bandaging the parts down with tar bandages. The bandages are left on for four or five weeks. Out of ten cases only one proved a failure. In this case the flap consisted of scar tissue due to previous operation. The bandages are six yards of unbleached muslin. Two dozen are prepared at one time, placed in a can and pine tar poured over them. In a few hours the tar has thoroughly penetrated all parts. It is found that the tar does not soak into the bandages if they are made from muslin that has been starched and bandages tightly rolled.

Meeting adjourned.

IN THE STOCK YARDS AGAIN.

Meeting again reconvened 8 A. M. February 14, 1906, in fine-stock pavillion at Kansas City Stock Yards.

Prof. Kennedy said: "Among the qualities a good judge must possess is first to be a close observer: to see things quickly and accurately. Second, judgment: to be well balanced in his judgment. Third, ideal type of the animal in mind which he is judging. Among things to keep in mind were, first, market demand. The type that brings the highest price. To keep in mind the breeding of heavy parts that bring the highest value upon the block; second, breeding type of the animal, which includes color, weight, conformation, various points of development of head and neck, fore quarters, body, and hind quarters. The idea was first to determine the weak and then the strong

points of the individual. The length and depth of the body, lowness to ground, straightness of top and under lines. Things to be observed in observing from behind are width of quarters, straightness of legs; from in front, character of head, width of forequarters, constitution as determined by width and depth of chest. Compact and smooth quarters, softness of skin, covering of ribs, back, loins, etc., and mellowness of coat, were among the other points mentioned. The buyer of beef cattle should bear in mind:—the killing percentage, proportion of cut in back, loin and hind quarter, the quality of meat. Under points that indicate good feeding qualities were mentioned:—Deep in the flanks, low to the ground, smoothness of hips, tail, heads straight and low. Among the important points to be taken into consideration from breeding standpoint of Shorthorn are: General appearance; conformation; length, width, and depth, low to the ground; quality and natural flesh; width between the eyes; shape of heads and horns and color. In this type red, red and white or roan are allowable. Color of nostrils should be clear, etc.; bone should be medium size; small joints; head not too heavy; straight in the legs and not down in the pasterns. Three heifers and three bulls of Shorthorn and the same numbers of Hereford were presented in their turn and those present were provided with score cards and each tried his hand at judging.

At 10 o'clock the judging adjourned and a meeting continued at the horse sales pavillion, where a talk upon the breeding and judging of horses was given. Some of the interesting points in Professor Kennedy's remarks were: The man who breeds horses without type and simply has horses to sell is a failure from a financial standpoint. In the market demand for horses the draft horse occupies one of the most prominent places. They are easily reared, and when sound or serviceably sound are of high market value. The price of such animals is gauged by the weight of said animal. Each additional 100 pounds from 1600 to 1800 raises the value $25; from 1800 to 2000 pounds $50; every 100 pounds over 2000 pounds $100. The prices of heavy harness, carriage and coach horses are arranged in like manner. The heavy harness, carriage and coach horse wear collar and back pad, may not be over 14 hands, and weigh 1000 to 1300 pounds; should be good action, plump in form. The prices of such range from $200 to $3000. Those 15 to 16 hands are the most popular. The roadsters should have trottting speed with finish; head and neck should

be clean cut; not so plump as the coach horse. The European plain-gait saddle horse has short tail and mane and can walk, trot, canter. The American gaited saddle horse has long tail and mane and can walk, trot, canter, pace, foxtrot, etc. The gaited saddle horse sells for a higher price than the plain gaited. A type of coach and draft horses was presented and a talk on the various points of each was made. Among the points brought out were that the draft horse should be low to the ground; wide across the heel; the width across the heel should be one-half the distance from the toe to the heel. A horse with an upright pastern is regarded as prone to develop side bones.

Adjourned to luncheon.

At 2 P. M. the judging of horses was resumed. Three Belgian stallions were presented; all in attendance were provided with score cards. The experience in judging of the various types of horses under so competent an instructor as Professor Kennedy was greatly appreciated by all. In his visit to Belgium he observed that horses worked at an age of 18 months were consequently shod younger and as a result possess smaller feet. Two draft geldings furnished by Swift & Co. were presented and scored; J. Crouch & Son also furnished German coach and Percheron stallions.

Meeting adjourned at 5 P. M., ending the most interesting meeting in the history of the Association.

B. F. KAUPP, *Secretary.*

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-fourth meeting was called to order by President H. S. Smith, of Albion, in Parlor A, Downey House, Lansing, Feb. 6, 1906.

City Attorney O. J. Hood, representing the Mayor of Lansing, gave an address of welcome in a very neat and pleasing manner, which was responded to very appropriately by Dr. G. W. Dunphy, of Detroit.

The following members were present at roll-call:—Drs. Henry M. Armour, Litchfield; W. L. Brenton, Detroit; J. Black, Richmond; Hal L. Bellenger, Plainwell; F. M. Blatchford, Brighton; W. J. Byers, Charlotte; Wm. Coxe, Mayville; D. W. Curtis, Cadillac; D. Cumming, Port Huron; T. G. Duff, St. Louis; Frank Duncan, Ithaca; C. C. Dauber, Sturgis; G.

W. Dunphy, Detroit; J. S. Donald, Bay City; W. H. Erwin, Howell; M. E. Elzinga, Grand Rapids; R. F. Erwin, Alma; Geo. Fitchett, Caseville; Thos. Farmer, Grand Blanc; H. M. Gohn, St. Johns; Geo. D. Gibson, Adrian; James Harrison, Maple Rapids; W. S. Hamilton, Chelsea; Wm. Jopling, Owosso; J. J. Joy, Detroit; C. L. Jones, Monroe; A. McKercher, Lansing; R. W. McDonald, Flint; Geo. C. Moody, Mason; Robertson Muir, Grand Rapids; H. Wynn Nobles, Hastings; C. C. Petty, Lake Odessa; Wm. J. Rook, E. Holland; J. B. Stevens, Yale; H. S. Smith, Albion; C. C. Slaght, Macon; Z. Veldhuis, Freemont; Geo. Waddle, Kalamazoo; Geo. A. Waterman, M. A. C.; C. A. Waldron, Tecumseh; J. C. Whitney, Hillsdale; J. E. Ward, Perry; P. W. Wooley, Lapeer.

Honorary members present: Drs. H. P. Baker, Lansing; Prof. Chas. E. Marshall, M. A. C.

Visitors present:—Drs. W. L. Mills, Peru, N. Y.; T. L. McConnell, Warsaw, N. Y.; E. I. Rishel, Sturgis; A. E. Alexander, Williamson; W. A. Haynes, Jackson; W. F. Carr, Bay City; D. S. Krull, Union City; R. C. Rolls, Eaton Rapids; H. E. Rea, West Branch; John W. Will, Flushing; and T. H. Buckingham, Stockbridge.

Ladies present:—Mrs. S. Brenton, Mrs. J. C. Whitney, and Mrs. G. W. Dunphy.

Dr. H. S. Smith delivered his address as President, which was as follows:

PRESIDENT'S ADDRESS.

"*Ladies and Gentlemen and Fellow-Practitioners:*

"It affords me great pleasure upon this occasion, the 24th annual meeting of the Michigan State Veterinary Medical Association, to most cordially welcome you as you assemble once more in counsel for the further advancement and edification in behalf of the noblest of all professions, viz., administering to the wants of our dumb friends who cannot help themselves but suffereth and complaineth not. I commend in you this spirit of determination, which brings you together year after year, to glean and exchange knowledge that you and your fellow-practitioner may be of greater value in assisting the onward and upward progress of your profession; and may your earnest endeavors be rewarded by the success they deserve, viz., by placing our noble profession on the plane it belongs with its sister profession, and this reward surely must come, and which can only be reached by seeking for those qualities which ennoble us

and qualify us that we become indispensable as professional citizens in the community in which we labor, hence thus we will raise the standard of the veterinarian far above where his kind have so long held him. So let us always be mindful of the fact that each and every act of ours, whether professionally or otherwise, are the only means by which our clientele and the public may determine our standing and through which we may receive and maintain professional respect and appreciation, and as we are individually so shall we be collectively as a State association; and establish professional respect and appreciation throughout our State. And the same verdict may be applied to us as a national association or body, from which is determined our standing as a body of national benefactors and contributors to America's science. Hence, it is not far-fetched in saying that we as professional individuals are directly responsible in a degree for the standing of the same in the eyes of the veterinary world, and I believe that this was the sentiment of the pioneer members of our association when they met together twenty-four years ago and organized this association from which has resulted a great deal of good, which you and I are to-day unconsciously enjoying. Since that time the pioneer members and the increasing membership have worked consistently for its betterment and should have accomplished all that could be desired were it not for rivalry and contending influences; and I wish that every qualified practitioner within our State would feel it incumbent upon him to consider himself responsible as an individual for our professional standing in Michigan, for we are its sponsors in the eyes of the veterinary world, and if Michigan does not keep apace with the wonderful strides which are being made throughout this and other countries we individually and collectively are responsible and must stand the reflection of criticism by our professional brethren of other States. Whereas, if, on the other hand, we raise the standard, so do we rise and merit all honors to our profession that other States are enjoying, as all other principal States have succeeded in obtaining satisfactory legislation to control the practice of veterinary medicine, it is with regret that we are obliged to acknowledge our veterinary legislation in Michigan falls far short of the ideals of us who are members of the Michigan State Veterinary Medical Association, and now I appeal to the younger members of our professson and also to those who are about to join our Association to-day; in the name of the profession you represent and in honor of the various colleges from which you have graduated

and for the sake of the standing of the veterinary profession in the State of Michigan, to extend to us your best endeavors and active assistance in furthering the progress of our profession, and I assure you if every qualified practitioner in the State of Michigan will but place a shoulder to the wheel with us in our endeavors, we will accomplish our object and each individual practitioner will reap a lasting benefit, and be the means of causing our State to become a more important factor in America's scientific progress. We have reason to look upon some of our sister States with envy and pride in the rapid strides that they are making and the recognition that they are demanding and being rewarded; among them Pennsylvania. With gratification we note that within the last year she has made appropriations of $200,000 for research in her veterinary and agricultural pursuits, also sent the Dean of their veterinary department as a delegate and representative to the World's International Medical Congress at Budapest this year. But all this was not given without being asked for; she first proved herself worthy of such a demand, then demanded and received it, thus proving that scriptural passage, 'Ask and ye shall receive, etc.' This same stands good for Michigan, when we prove ourselves worthy of it. A word here with reference to our sanitary laws and commissions might not be amiss. While Michigan to-day is enjoying the good fortune of being as free and if not freer from infectious and contagious communicable diseases than any other State, she may not always be so favored by this good fortune; while our commission has been a careful and watchful one, always exerting the best of their abilities in behalf of the State, and deserve credit for the work done in the past, taking into consideration their limit of appropriation, etc., which prevents them from having suitable and proper means of carrying on experimentations with the various diseases of our country, and which are liable at any hour to crop out within our State and from which much valuable time would be lost before the proper methods of control and eradication might be inaugurated, and the financial loss of the live-stock industry in the meantime would suffer fourfold the amount necessary for maintaining a suitable place and provide an annual salary for a qualified veterinarian, who could then devote all his time and attention to said commission, and I am strongly in favor of having our State veterinarian paid a salary sufficient that he can devote his entire duties to research and experiments of such as would be of value to said commission and State and that a suitable place be

provided for him, if not otherwise by having privilege and access to the bacteriological department of our Agricultural College in Lansing, Mich., and if such arrangements could be made the said State Veterinarian to locate permanently in Lansing during his term of office, and devote his entire attention and best services to this work, which is impossible to obtain now under the system of paying them per diem. Still we have as a nation been slow in realizing the needs for such work ; so much so, that the Germans, who are considered a plodding nation, find it opportune to express themselves by an article, which appeared in the *Seuchen Versuchsstationer*, and was copied by our AMERICAN VETERINARY REVIEW a few months ago, which reads thus :

" 'It is strange that the United States, with their vastly greater live-stock possessions, have not before this made more ample provisions for investigation concerning diseases of animals and for veterinary education.'

" Yet I feel that we can accept this with a German accent. However, we as a profession cannot but accept with regret that 'our country continues to be the only one of the leading nations of the world that maintains as civilians those who are engaged as veterinarians in our army service,' and you and I as individuals must stand for this criticism for not qualifying our demands to the extent that they will be recognized by the head of our military department and government. So let us get to work and do our share in remedying this neglect by uniting in a spirit of friendship and mutual coöperation, which are the essential factors in the solution of all difficult problems. Let us bury all bickerings and prejudices, which have retarded the advancement of our profession in the past, and continue the progress that has been made until the standing of the veterinary profession in Michigan becomes the envy of our sister States and a credit to the nation we represent professionally."

After the President's address, the following gentlemen made application for membership :

A. McKerracher, Bay City, Mich., O. V. C. '78.
Ralph C. Harris, Fenton, O. V. C. '04.
W. A. Haynes, Jackson, Chicago College, '03.
A. E. Alexander, Williamson, O. V. C. '93.
B. C. Smith, North Branch, O. V. C. '03.
A. E. Macbeth, Battle Creek, O. V. C. '89.
H. E. Rea, West Branch, O. V. C. '02.
John W. Will, Flushing, O. V. C. '97.

Dan Hisey, Saginaw, West Side, O. V. C. '94.
R. C. Rolls, Eaton Rapids, O. V. C. '94.
D. S. Krull, Union City, O. V. C. '00.
T. H. Buckingham, Stockbridge, O. V. C. '92.
T. H. Attridge, Harbor Beach, Detroit College, '94.
W. F. Carr, Bay City, O. V. C. '05.
A. W. Simeral, Kalamazoo, Uni. of Missouri, '05.

The applications were referred to the Executive Committee, which recommended as follows, that Drs. Haynes (vouchers Joy and Dunphy), Alexander (Smith and W. H. Erwin), B. C. Smith (Smith and Black), Carr (Dauber and Mix), Attridge (Smith and Black), Macbeth (Smith and Bellinger), Krull (Smith and Armour), Rolls (Smith and Black), Rea (Smith and Black), Will (Smith and McDonald), Hisey (Sutherland and Smith), and Buckingham (Smith and Black), be admitted to membership, and that the applications of Drs. McKerracher and R. C. Harris be laid over, as they were unaccompanied by the required fee. Also that the application of A. W. Simeral be held up until the college from which he graduated be investigated, and, if after investigation the Secretary and President be satisfied, Dr. Simeral, upon the payment of fee, be admitted.

Moved and supported that the rules be suspended and that the Secretary be instructed to cast the vote of this Association for the following gentlemen: Drs. Alexander, Haynes, B. C. Smith, Carr, Attridge, Macbeth, Krull, Rolls, Rea, Will, Hisey, and Buckingham. Carried.

The Secretary then cast the ballot and President Smith declared the gentlemen elected to membership.

Moved and supported that the President appoint a committee to ascertain how many would attend the banquet. Drs. Dunphy and Joy were appointed as such committee. On motion the President also appointed a committee to arrange for transportation to the M. A. C. Dr. Bellenger was appointed as such committee.

The annual report of the Secretary and Treasurer was read, and referred to the Financial Committee.

Dr. James B. Bradley, Michigan Auditor-General, gave an address, which was very much appreciated. He spoke in a complimentary manner of the veterinary profession and the good that was being done in stamping out disease, of the vast importance of the horse, of the strides of the veterinary profession in the past few years and the importance of the veterinarian in guarding the public against impure meat products.

Moved and supported that we give Dr. Bradley a vote of thanks for his able and interesting address. Carried by rising vote.

Correspondence was read from Governor Warner, Representative Morrice and from absent members, which was received and placed on file.

REPORTS OF COMMITTEES.

Legislation.—Dr. Wells, chairman, being absent, this report was laid over until the following day.

Intelligence and Education.—Dr. Jopling reported quite fully for this Committee. He spoke of the fine improvement on veterinary lines. Thought it was good policy to get the professors at the M. A. C. to give us their support and good will. Was pleased to see two of them on our program. Speaking of the financial aid extended to the Veterinary Department of the University of Pennsylvania, he hoped such assistance could be procured from our State to establish a veterinary department at our Agricultural College, or at the U. of M.

Finance.—Dr. Nobles, speaking for the Committee, said they had examined the books of the Secretary and Treasurer and found everything correct and a balance on hand of $70.10.

Disease.—Report postponed until the following day.

Moved and supported that we adjourn until 7 o'clock P. M.

Reconvened at 7.30 P. M.

ELECTION OF OFFICERS.

Election of officers was first in order. Moved and supported that the President appoint two tellers. Drs. Joy and Duff were appointed.

The following were elected:

President—James Harrison, Maple Rapids.

First Vice-President—R. W. McDonald, Flint.

Second Vice-President—T. G. Duff, St. Louis.

Third Vice-President—George D. Gibson, Adrian.

Secretary-Treasurer—J. Black, Richmond.

Directors—Hal L. Bellenger, Plainwell; H. M. Armour, Litchfield; W. L. Brenton, Detroit; J. B. Stevens, Yale; A. McKercher, Lansing; D. W. Curtis, Cadillac.

CASE REPORTS

Dr. J. C. Whitney's report on "My Experience With Cribbers" was well received. The Doctor claimed good results from surgical treatment, but in every case it would recur after six or eight months. Dr. Joy in discussing this subject asked

for a difference between a cribber and a wind-sucker, claiming they are different conditions. The Doctor was of the opinion that in the wind-sucker air was swallowed and that it caused indigestion and poor condition. Dr. Dunphy said he did not believe air was swallowed or sucked into the stomach. Dr. Armour thought it was possible. Drs. Smith and Duff also took part in the discussion of this subject.

Dr. R. W. McDonald read his case report, "A Supposed Case of Rabies." He cited a case that came under his observation in which a dog showed the symptoms of rabies after being bitten by another dog, supposed to be rabid. The former was destroyed about 14 miles from home. The owner went out and got the head, which Dr. McDonald sent to Dr. Marshall, Bacteriologist of the M.A.C. The latter injected some of the brain into rabbits and got no reaction. Dr. Muir discussing this case, said that he had seen but very little rabies in dogs, but had seen much among horses and cattle. Prof. Marshall said that the brain sent him by Dr. McDonald was in such a state of decomposition that the results might not be reliable and that possibly the dog might have been rabid. He also claimed that the period of incubation might be as short as 7 or 9 days, according to virulence of the virus. Dr. Dunphy also made this claim, but the period was usually from 14 to 24 days. In cows from 13 to 27 days. Dr. Armour's experience was 13 to 47 days.

Adjourned to banquet at Church Parlors of the Episcopal Church.

MICHIGAN AGRICULTURAL COLLEGE—FEB. 7TH, 9.30 A. M.

Met in the stock-judging class room for clinic, where the following operations were performed:

Operation consisting of dividing the tendon of the peroneus muscle for stringhalt, by Dr. Hal L. Bellenger.

Operation upon an alleged cryptorchid, Dr. Dunphy.

Operation of trephining for the purpose of exploring a facial fistula, Dr. Geo. M. Moody. This operation revealed a tooth deposit that was in a caries condition and was thought to be the cause of the fistula.

Adjourned to the Veterinary Laboratory, where Dr. McDonald operated on a bitch, performing ovariotomy, and Dr. Dunphy operated on a wry tail.

1.30 P. M.—Chapel, M. A. C.

Meeting called to order by President. Roll-call.

Prof. D. C. Smith, of the Experimental Station of the Agricultural College, being in a hurry to be excused, was called upon for his address upon "Live-stock and Public Health." Among other things, the Professor said there was a great difference in the action of tuberculin owing to the quality, and he thought a pure article should be provided by the State authorities and be placed in the hands of every veterinarian requiring it. In conclusion he extended the good will of the M. A. C. to the visiting vets and asked them to look over their live-stock and farm and to come again. Upon motion, a vote of thanks was extended to Prof. Smith for his contribution to our program.

Dr. James Harrison read an interesting paper upon an interesting subject, viz: "Chemical Knowledge of Food Stuffs as an Aid to Diagnosis."

Dr. Veldhuis read a very interesting paper entitled, "Impressions Received at the A. V. M. A."

The Committee on Legislation through Dr. H. M. Gohn made a report at this time. Dr. Gohn stated that owing to opposition from those high in the council of the powers, that nothing was accomplished this year. Dr. Black reported that when conditions existing were discovered efforts were withdrawn owing to the hopelessness of our prospects and that only about $22 had been expended for this purpose during the year. Dr. Harrison advised the necessity of beginning our efforts by educating the farmers and enlisting them in our behalf. Dr. H. S. Smith also advised this course.

Committee on Diseases was also called upon to make its report. Dr. Dunphy, chairman, gave a very interesting talk and exhibited some specimens of intestinal calculi found in the alimentary tract of one of P. D. Co.'s laboratory subjects. A nail formed the nucleus and the deposit was apparently cement, supposed to come from the floor through the animal licking. Dr. Dunphy called upon Dr. J. B. Stevens, of Yale, to report a mysterious disease he had encountered at Byron, Michigan. Dr. Stevens said the outbreak occurred in a stable of imported stallions. The symptoms were as follows: temperature from 103 to 107 F., painful grunt with each breath, with each expiration the blood would spurt from both nostrils with a gush and would continue until the discharge would be as clear as water, head pendulous, constipated, urine dribbling almost continuously. The majority of those stricken recovered after a long and critical period of convalescence. No such disease had been encountered by any of the gentlemen present.

Dr. George A. Waterman, Professor of Veterinary Science at the M. A. C., gave an address at this time entitled "Thoughts."

The Executive Committee reported favorably upon A. E. Alexander's application, and recommended that Dr. Wilkinson be suspended for the non-payment of dues and given the privilege of making application as a new member. The report and recommendation were received and adopted.

Moved and supported that a meeting of this Association be held in Detroit next fall during the State Fair. Arrangements and date to be left to the officers. President-elect Harrison was called upon and after a short address he appointed the following standing committees:

Intelligence and Education.—Dr. F. M. Blatchford, Brighton; Dr. H. L. Bellenger, Plainwell; Dr. J. B. Stevens, Yale.

Diseases.—Drs. Z. Veldhuis, Fremont; William Jopling, Owosso; Prof. C. E. Marshall, M. A. C.

Finance.—Drs. C. C. Petty, Lake Odessa; George Fitchett, Caseville; H. Wynn Nobles, Grand Ledge.

Legislation.—Drs. C. A. Waldron, Tecumseh; J. E. Ward, Perry; C. C. Dauber, Sturgis.

Resolutions.—Drs. W. H. Erwin, Howell; W. H. Wilkinson, Holley; C. C. Slaght, Macon.

Press.—Drs. W. L. Brenton, Detroit; D. S. Krull, Union City; D. W. Curtis, Cadillac.

Clinic.—Drs. S. Brenton, Detroit; J. J. Joy, Detroit; G. W. Dunphy, Detroit.

Moved and supported that we adjourn to meet in Detroit, State Fair time. Carried.

J. BLACK, *Secretary.*

TEXAS VETERINARY MEDICAL ASSOCIATION.

Pursuant to a call issued by President Flowers, the members assembled at the Fair Grounds, Dallas, March 19, for their fourth annual meeting. It having been decided by the Executive Committee that the programme this year should consist of clinics and an evening session only, the members proceeded thence to the commodious hospital of Dr. L. E. Warner, at 186 Thomas Ave., where several cases, gathered through the efforts of the Dallas members, Drs. Flowers, Warner and Langley, awaited their attention. After these were inspected, examined and discussed, several successful operations were performed by Drs. Bray, Lewis, Marstello and Francis. An interesting and

spirited discussion ensued upon the exhibition of several other interesting cases. This concluding the first part of the day's program, the members separated to meet again at the Elite at 8 P. M., where a very enjoyable and delightful *menu* awaited them. For an hour or two the pleasures of the table added zest to social and fraternal converse, while matters professional were touched upon informally. At its conclusion the regular order of business was entered upon as follows:

Roll-call:—The following members responded: Drs. M. Francis, College Station; F. G. Cook, Paris; W. G. Langley, Dallas; L. E. Warner, Dallas; Jas. Lewis, McKinney; Wm. M. McKellar, Ft. Worth; S. G. Bittick, Ft. Worth; G. R. Flowers, Dallas; A. E. Flowers, Dallas; T. A. Bray, El Paso; W. A. Knight, Houston; E. L. Lewis, Waxahachie.

The minutes of the last annual meeting were read and approved.

The Executive Committee submitted the following report:

"We, the Executive Committee of this Association, have examined the applications and credentials of the following applicants for membership, and recommend them to the ballot of the Association: Drs. Ross Marstello, College Station; T. W. Watson, Corsicana; L. E. Johnson, El Paso; R. W. C. Lowry, Amarillo; J. C. Brown, Cleburne."

(Signed) "A. E. Flowers, President.
"T. A. Bray, Vice-President.
"W. G. Langley, Treasurer.
"E. L. Lewis, Secretary."

Treasurer Langley submitted the statement of receipts and expenditures since last meeting, which was approved.

The admission of new members now being in order, the following names were presented, as per report of Executive Committee, and upon ballot were unanimously elected to membership:

Ross Marstello, D. V. M., Ohio State Univ., '06, College Station.

T. W. Watson, V. S., Ontario, '87, Corsicana.

L. E. Johnson, D. V. M., U. of Pa., El Paso.

R. W. C. Lowry, D. V. S., K. C. V. C., '05, Amarillo.

J. C. Brown, D. V. S., U. of K. C., '04, Cleburne.

The application of Dr. J. W. Burby, of San Antonio, held over from last meeting, was now considered, and it being shown that the error was unimportant, Dr. Burby was unanimously elected to membership.

The election of officers for the ensuing year resulted as follows:

President—T. A. Bray, El Paso.
First Vice-President—L. E. Warner, Dallas.
Second Vice-President—Jas. Lewis, McKinney.
Secretary—E. L. Lewis, Waxahachie.
Treasurer—M. Francis, College Station.

Under new business, the program for the next meeting came up for discussion. Dr. Lewis, of Waxahachie, moved that we include a series of brief papers along practical lines to be presented and read at the next meeting. Dr. Langley moved a committee composed of the President and one member on place of meeting, be appointed to map out program as suggested. Carried.

A vote of thanks was extended Dr. Warner for his courteous invitation to the Association to utilize his finely-equipped hospital for the morning clinics. A vote of thanks and appreciation was also extended the retiring officers of the Association, for their zeal in behalf of the Association and profession during the past year.

Photographs of the operations at the morning clinics having been taken by a city photographer, it was moved by Dr. Warner, duly seconded, that they be purchased by the Association, provided same proved satisfactory. Carried.

Dr. Langley was appointed as a committee to pass upon and purchase one for each member.

Dr. Bray here exhibited a specimen of sarcomatous growth from the eye of a steer. This growth, it seems, is not uncommon in some regions, and is of an insidious and serious character, involving the entire orbit, the soft tissues and membranes adjacent to eye, and finally enveloping entire head. Upon microscopical examination its cancerous nature was apparent, it being composed of round cells seemingly of embryonic connective tissue, with traces of epithelial which had the appearance of invaginated conjunctivæ. The Doctor stated the lesion was most prevalent among "white faces," and always attacked the choicest of the herd. He attributed them to infection by the horn fly.

Dr. Fallsetter testified to seeing the same in the horse and mule. One of the horses was an Albino. He noted a gradual enlargement of the membrana nictitans. Treatment of six weeks of no avail. Enucleation was performed, he finding generalized necrosis of ball and bones of orbital fossæ. Most cases observed began in summer. Dr. Marstello stated he saw

two cases in horses and one in dog. In his opinion, it began in horses on the cornea and in cattle on membrana nictitans. After operating on horse he had a recurrence. It was the consensus of opinion of all who had had similar experience that medicinal treatment was futile, and the only satisfactory method was extirpation of all parts involved.

Dr. Falsetter, of Dallas, was called upon and responded in a happy and feeling manner, expressing his pleasure in being a guest upon such an auspicious gathering of the profession of the State. He prophesied great things for the future of the profession and urged ceaseless effort toward the uplifting and progression of the members as useful and honored citizens of the commonwealth. Dr. Falsetter is one of the pioneer veterinary surgeons of the Lone Star State, having settled here many years ago, when veterinary surgeons were almost unknown.

Judge Hawkins, of the Sanitary Commission, also a welcome guest of the Association, on being called responded in a felicitous speech, concluding with an earnest appeal that members take cognizance of the paramount importance of sanitary work in that it is fraught with so much that is vital and important to the welfare of any community. He emphasized the growing appreciation by the public of the intelligent efforts of trained men along these lines, and of its equal importance when studied and exercised by the veterinary practitioner, who is, and should be, in conjunction with the practitioner of human medicine, his co-adjutor and colleague in the guardianship of public health and hygiene.

While the attendance at this, our 4th annual meeting, was not as large as we hoped, still it was a very satisfactory and enjoyable one. The membership is steadily increasing, and it will not be long before we will have an association of which the State can well be proud. Veterinary legislation, as in the past, will be our slogan in the future, and this obtained all other matters will be easy. Recognition and protection are absolutely essential to establish for all time the status, socially and professionally, of the veterinarian. That "unique antique" of blow and bluster, of buckskin and blasphemy, that 4-plied quintessence of gall and galluses, the "hoss doctor" of old, so long the weapon with which the public hurled contempt at the profession, and for whose fat catalogue of sins of commission and omission the qualified veterinarian has had to bear the brunt and burden, will soon attune his unwashed ear to the requiem sounding in the distance.

There being no further business before the Association, on motion of Dr. Francis, duly seconded, the Association adjourned, subject to the call of the Executive Committee.

E. L. LEWIS, *Secretary.*

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting was held at Hotel Hartford, Hartford, February 6, 1906, and was called to order by the President, Dr. Gardner, at 11.30 A. M.

The following responded to roll-call:—Drs. C. L. Adams, H. E. Bates, F. F. Bushnell, H. C. Balzer, G. T. Crowley, G. E. Corwin, Jr., B. K. Dow, J. H. Gardner, L. B. Judson, J. H. Kelley, P. T. Keeley, R. P. Lyman, G. W. Loveland, R. D. Martin, E. C. Ross, J. E. Underhill, H. Whitney, C. R. Witte, and H. L. Tower.

Visitors:—Drs. B. D. Pierce and Harry Lukes, Springfield, Mass.; J. A. McLaughlan and L. T. Dunn, Providence, R. I.; C. T. Frye, River Point, R. I.; R. H. Davis, Bridgeport, Conn.: W. H. Pullen, Greenwich, Conn.; G. A. Smith, New Haven, Conn., and H. O. Averill, Washington Depot, Conn., Commissioner of Domestic Animals, also an honorary member of the Association.

Minutes of the previous meeting were read and approved.

Letters were read by the Secretary from the honorary members, replying to notices informing them of their election to honorary membership in the Association at its last meeting. It was voted that the letters be placed on file as property of the Association. Several other communications were read and laid on the table until other business could be transacted.

Reports of the Secretary and the Treasurer were read and accepted.

The Board of Censors reported unfavorably on the application of George A. Smith, V. M. D. A ballot was called for, resulting in a unanimous rejection of Dr. Smith's application.

The following applications for membership were read and referred to the Board of Censors:

Robert Holt Davis, D. V. S., N. Y.-A. V. C., Bridgeport.
W. H. Pullen, V. S., O. V. C., Greenwich.
William J. Glasgow, V. S., O. V. C., Springfield, Mass.

The election of officers resulted as follows:

President—Dr. G. W. Loveland.

First Vice-President—Dr. J. H. Kelley.
Second Vice-President—Dr. R. D. Martin.
Secretary—Dr. B. K. Dow.
Treasurer—Dr. Harrison Whitney.
Board of Censors—Drs. Thos. Bland, J. H. Gardner, F. F. Bushnell, L. B. Judson, and J. E. Underhill.

Adjourned for dinner at 12.45. Reconvened at 2.30 P. M. Under the head of new business, it was voted to pay the Secretary a salary of $25 a year, to begin with the ensuing year.

Dr. R. P. Lyman presented a bill from Attorney Garvan, of Hartford, for $100, balance for services in securing the present veterinary law for the Association. Dr. Gardner made a motion that Dr. Lyman see Lawyer Garvan and inform him that the Association considered he had received sufficient fees for his services and that the Association could do no more. Motion seconded and carried.

A letter was read from the Secretary of the Massachusetts Veterinary Association, asking if the Connecticut Association would accept financial assistance from their Association to make the New Haven meeting of the A. V. M. A. a New England convention as far as possible. It was voted that the Connecticut Veterinary Medical Association thanks the Massachusetts Veterinary Association for their kindly offer of finances and coöperation towards the entertainment of the A. V. M. A. in New Haven next August, and that as the Connecticut Veterinary Medical Association has invited the National Association, they desire to make it a State affair. The Connecticut Veterinary Medical Association would be pleased to accept and acknowledge any financial aid that the Massachusetts Veterinary Association may offer, and requests that a delegate or delegates from their Association be selected to serve upon the local committee of arrangements.

Motion made and seconded that the Association be a committee of itself to entertain the A. V. M. A. at the New Haven meeting, with a sub-committee composed of seven members, to be appointed by the President. Motion carried. The President appointed for the sub-committee, Drs. Ingram, Kelley, Ross, Whitney, Bland, Martin and Lyman.

Dr. Ross announced that suit had been brought against the Association by Dr. F. G. Atwood, who was expelled for unprofessional conduct at the annual meeting in 1904. The papers were served on Dr. Ross, setting forth the claim of $1,000 damages. After the papers specifying the claim for damages had

been read, Dr. Lyman presented Dr. Atwood's resignation as a member of the Association and tendered his dues to date, saying Atwood claimed he was not legally expelled from membership and was therefore still a member of the Association. He stated he had talked the matter over with Dr. Atwood several times, and that Atwood had agreed to withdraw the present law suit if the Association would accept his resignation. This announcement started a lively discussion, in which most of the members freely and vigorously participated. After the case had been argued long and earnestly, it was voted that, provided Dr. Atwood will withdraw his suit against this Association, and make sworn affidavit signifying in writing over his signature that he will not bring further suit against this Association collectively or against any individual of this Association, that may have a bearing upon the lines of the present suit, his resignation will be accepted at the next meeting of this Association, and that he shall discontinue all further advertisement or publication of this affair. The Secretary was instructed to notify Dr. Atwood of this action.

Dr. Ross, chairman of the Committee on Resolutions on the death of Dr. Nathan Tibbals, offered the following:

"WHEREAS, It has pleased God in His infinite wisdom to call from this world our esteemed and honored professional brother, Nathan Tibbals, at the close of a long life of usefulness and success in his profession, and of kindness and assistance to all with whom he came in contact; be it

"*Resolved*, That we, the Connecticut State Veterinary Medical Association, individually and as a body, pause for a moment to express our regret at the loss of so honorable a member of our Association and so good and true a friend of veterinary medicine, and to convey to his relatives and friends our sympathy in their bereavement and sorrow."

It was voted that the resolutions be adopted and spread on the records of the meeting and a copy be sent to the family of the deceased.

After the business of the meeting had been transacted, Commissioner on Domestic Animals H. O. Averill, an honorary member, gave a short address on sanitary conditions of keeping cattle in stables.

Dr. C. R. Witte read a paper on "Tuberculosis."

Dr. R. P. Lyman read a paper on "The Veterinarian in Connecticut: His Attainments and His Possibilities."*

* Published in the March REVIEW.

Dr. B. D. Pierce, of Springfield, Mass., gave an interesting description of an outbreak of rabies in Massachusetts and his experience in tracing the origin of the various cases.

Dr. L. T. Dunn, of Providence, R. I., spoke of the work his Association was doing toward veterinary legislation.

An interesting discussion followed each paper and address.

It was voted to hold the semi-annual meeting in New Haven at call of the President.

Meeting adjourned at 5.45 P. M. B. K. DOW, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting was called to order at 8.30 P. M., Dr. C. E. Clayton, the Vice-President, in the chair.

Roll-call dispensed with. Minutes of previous meeting adopted as read.

Members present: Drs. J. E. Ryder, C. E. Clayton, E. B. Ackerman, J. L. Robertson, J. E. Assing, C. Lamensdorf, Roscoe R. Bell, R. S. Mackeller, T. A. Keller, R. Dickson, D. J. Mangan, C. W. Shaw, J. J. Foy, R. J. Schreiber, T. G. Sherwood, A. O'Shea, W. Lellmann, G. F. Bowers, R. W. McCully, R. W. Ellis, G. H. Berns, and F. C. Grenside. Visitors: Drs. F. H. Miller, W. Reid Blair, T. S. Childs, A. Silkman, and Hayes; also students of the New York-American Veterinary College.

Dr. F. H. Miller read a paper on "Observations Made in the Diagnosis and Treatment of Parasitic Dermatitis of the Dog."*

Dr. Bell then took the chair, and a very instructive discussion followed on Dr. Miller's paper.

Dr. Wilfred Lellmann spoke on "Some Interesting Facts," during which he told of the results he has obtained in the use of bovovaccine. The Doctor's talk was very conservative, and he reminded the members that science has no country.

Dr. Miller reported a couple of dog cases; he recited the history of each, and Dr. Blair reported the results of a microscopical examination of one of them.

Dr. F. C. Grenside read a paper on "A Veterinarian at the Horse Show."* The discussion which followed revolved itself around a great number of practical facts, and settled some questions on the problems which a veterinarian meets at the horse show.

* Will be published in a later number of the REVIEW.

The subject of illegal practicing was then taken up and a motion was made and carried to establish a prosecuting fund by the aid of voluntary subscriptions.

Dr. Clayton moved to appoint a prosecuting committee of three. Dr. Ackerman moved to amend Dr. Clayton's motion; instead of three, have the committee composed of four members, the fourth being the President of the Association.

The original motion and its amendment were duly seconded and carried.

Dr. Ackerman moved, it was seconded and carried that the committee be empowered to employ agents and an attorney.

The President appointed the committee, which consists as follows: D. J. Mangan, chairman, E. B. Ackerman, C. E. Clayton, Roscoe R. Bell.

Meeting adjourned. D. J. MANGAN, *Secretary.*

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting was held at Belfast, April 11th, 1906, and consisted of a clinic at the hospital of Dr. Darling during the afternoon, at which a number of interesting cases were presented for treatment. Different operations were performed by all members present, and each case was thoroughly and ably discussed by all. The clinic proved, as usual, to be a drawing card, and twelve members turned out and helped to make a most interesting and profitable afternoon.

At 7 o'clock the members adjourned to the Windsor Hotel, where a hearty supper was thoroughly enjoyed. The regular business meeting was called to order at the Windsor Hotel at 8.10 P. M., President, Dr. Blakely, in the chair. The following members answered to roll-call: Drs. Blakely, Augusta; F. E. Freeman, Rockland; Lord, Portland; Joly, Waterville; Darling, Belfast; McGillicuddy, Bath, and R. E. Freeman, Dexter. Visitors present were Drs. H. L. Stevens, Farmington, and Wm. Jackson, Belfast.

The minutes of the last meeting were read and approved.

The application of Dr. Pugsley, of Ashland, was read and accepted, and it was voted that he be made a member upon payment of initiation fee and signing Constitution and By-laws, and the Secretary was authorized to write him of same. Moved, seconded, and carried, that the Secretary notify all members who are back in dues to pay up to date or be suspended, and that the Secretary is to hold back certificates until all dues are paid.

Moved and carried that the books of the past Secretary and Treasurer be audited by the Executive Committee. Moved by Dr. Lord that the President look into the matter of Dr. W. H. Spear, of Portland. Carried.

In the matter of our new veterinary law, Dr. Freeman made complaint against one so-called horse doctor in his county, and asked the help or advice of the Association. Moved by Dr. McGillicuddy, of Bath, and seconded by all members present, that Dr. Freeman employ counsel and prosecute this man, and that the Association stand by what he does. Carried.

The next subject being the reading of papers. The Association had the pleasure of listening to a paper by Dr. A. Joly, of Waterville, entitled "Hog Cholera and Swine Plague." This was a fine paper, and the Doctor reported cases where he used the serum treatment with very gratifying results. This paper was fully discussed by all members present.

Dr. F. E. Freeman, of Rockland, was excused from reading paper by reporting a number of cases, especially where he performed cæsarian section on the hog and bitch with very flattering results.

Distemper in dogs was fully discussed by all members and all different remedies in the treatment of the disease were discussed.

Tuberculosis was discussed by all members, and was very interesting.

Voted that the next meeting of the Association be held in Augusta at Hotel North the second Monday in July.

Papers to be read by Drs. F. E. Freeman and W. S. Lord. Communications to be read by Drs. Murch and Salley.

A vote of thanks was extended Dr. Darling, for the valuable clinic he prepared for the meeting; also to Dr. Joly for the able paper that he read.

Meeting adjourned at 11 P. M.

R. E. FREEMAN, *Secretary.*

INDIANA VETERINARY COLLEGE ALUMNI ASSOCIATION.

This Association met March 30, at 2 P. M., at the College Building. Roll-call developed the fact that it was the best attended meeting it has had. Ten new members were admitted. It was ordered that a banquet should follow the next meeting. One of the main features was that of urging the new members

to spend much time reading veterinary publications, books, new literature, etc., including especially the AMERICAN VETERINARY REVIEW.

Officers elected for the ensuing year were as follows:

President—Dr. J. J. Herron, Tipton, Ind.

Vice-President—Dr. H. Alhersmeier, Indianapolis, Ind.

Secretary-Treasurer—Dr. Ferd. A. Mueller, Indianapolis, Ind.

FERD. A. MUELLER, *Secretary.*

AMERICAN VETERINARY MEDICAL ASSOCIATION.

FORTY-THIRD ANNUAL MEETING, NEW HAVEN, CONN., AUGUST 21 TO 24, 1906.

5246 OSAGE AVE., PHILADELPHIA, PA., April 16, 1906.

To the Members of the American Veterinary Medical Association:

As has been previously announced through the columns of the REVIEW, the next meeting will be held at New Haven, Connecticut, August 21 to 24, 1906. The date being only four months distant it is necessary for us to become active in preparation of the program. It is, therefore, requested that the members very soon send to this office the titles of their papers for this meeting so that the question as to the character of the program may be settled early. There are many who defer their decision in regard to attendance until they know what the program is going to be. An early announcement of the contributors and their subjects will aid greatly in getting a large attendance.

The report of the Cleveland meeting has been sent out and is now in the hands of the members. It is the largest book yet issued and is replete with good things. This book is certainly worth as much as the yearly dues, so that in this item alone each member has returned to him the annual outlay for his membership. In each case the report has been sent to the address last furnished to the Secretary's office. If any member has failed to get his copy, it is likely due to a change of address of which this office has not been notified. In this connection I should like to call attention to the fact that it is important to inform the Secretary immediately upon changing address.

Our membership should be much greater than it is. There are many good men scattered all through the country who ought in their own interest as well as that of the profession to be members. Each member has a duty to perform in directing these

men into our organization. Our growth would be more rapid if our missionary spirit were stronger. The amendment adopted at St. Louis requiring the application for membership to be in the Secretary's office thirty days before the meeting, resulted in fewer than usual securing election at Cleveland. Now that plenty of notice has been given this should no longer stand in the way, and the record at New Haven should far exceed that of any previous meeting. Remember that the application must be in before July 23, 1906. Application blanks and information will be furnished by your resident secretary or by this office. The list of resident secretaries may be found in the report of proceedings.

Let each one determine now to contribute his full share to the success of the meeting and start at once with the aim to accomplish glorious results at New Haven.

Sincerely yours, JOHN J. REPP, *Secretary.*

* * *

A MODEL RESIDENT SECRETARY.

Editors American Veterinary Review:

DEAR SIRS:—I am sending you the following letter to print as a sample of the sort of enthusiasm which if generally shown would soon swell our membership to the point at which it should be. My hope is that it may act as a ferment to the entire number of Resident Secretaries, yes, even to the whole Association.

Respectfully yours, JOHN J. REPP, *Secretary.*

"NASHVILLE, TENN., March 25, 1906.

"*Dr. J. J. Repp, Philadelphia, Pa.*

"DEAR DOCTOR REPP:—Your circular letter to Resident Secretaries received and contents carefully noted. It is quite an explanatory production and is O. K. for the purpose for which it is intended. I also received the copies of Constitution and By-laws and application blanks. Please send me about three or four more of each, as I am liable to need them. I expect to visit *each* and *every* eligible veterinarian in Tennessee and make a personal appeal for his membership in the A.V. M. A. I feel almost safe in promising to put the application of *every* eligible man in this State in *your* hands before the New Haven meeting. Yours truly, G. R. WHITE."

A DESPATCH from Fort Dodge, Iowa, dated April 16, says: "M. Stegner, a veterinarian, stooped over the bedside of his dying wife to catch her last words to-day and fell dead beside her."

NEWS AND ITEMS.

DR. M. R. THYNGE, of Morton, N. Y., has located in Charlotte, Mich.

PROF. CURIE, the discoverer of radium, was killed by being run over on April 19.

DR. F. V. MATTHEWS has established a nice practice and a very neat veterinary hospital in McKeesport, Pa.

PROF. WM. L. ZUILL, formerly of Philadelphia, Pa., is professor of laryngology and rhinology in the College of Physicians and Surgeons of Los Angeles, Cal.

DR. WM. NICHOLSON has been appointed city veterinarian of Allegheny, Pa., succeeding Dr. C. W. Boyd, owing to changes in political administration and authority.

DR. HARRY E. EMERY, of Pittsburgh, Pa., has lately built a large six-story pressed brick building, which he uses as a hospital, shoeing forge, boarding and sale stable.

DR. JUDSON BLACK, Secretary of the Michigan State Association, has been reëlected Treasurer of his municipality by a small majority, although his political party is about 200 in the minority.

DRS. A. B. SEXMITH, of South Lyons, Mich., and C. C. Mix, of Coldwater, Mich., graduates of the Ontario Veterinary College, took a post-graduate course at the Chicago Veterinary College during the term just closed.

DR. W. E. WIGHT has built an elegant residence and a commodious veterinary hospital in the aristocratic section of Pittsburgh, Pa., after having amassed a comfortable fortune in seven years in general practice in Pennsylvania.

DR. JAS. HARRISON, of Maple Rapids, Mich., President of Michigan State Veterinary Medical Association, has been appointed health officer in his town after a contest in which the Doctor and two M. D.'s were participants.

THE NOCARD MONUMENT.—At the last meeting of the Committee for the erection of the Nocard Monument it was decided that the ceremony will take place in the School of Alfort, France, in the forenoon of June 24, 1906. Any of our readers contemplating visiting Europe this summer should make a note of this date, and be present at this important function.

DR. D. O. KNISLEY, of Topeka, Kansas, is the inventor of a new design of stomach tube for use in the horse. It differs from other tubes in being double to permit the injection of fluid through a lesser and thinner walled compartment, and thereby

thin the stomach contents that it may flow more freely out through the larger and more rigid walled compartment.

THE WASHINGTON STATE COLLEGE, Pullman, Wash., announces the establishment of a four years' course in veterinary science, leading to a Bachelor's degree. We observe a full complement of veterinarians in the faculty, including Sofus B. Nelson, D. V. M., professor of veterinary science; Maynard Rosenberger, D. V. M., bacteriology and pathology; Kirk W. Stouder, D. V. M., anatomy and surgery; Wyatt E. Ralston, D. V. M., obstetrics; and Otto Menig, D. V. S., ophthalmology, while the allied branches are in charge of experienced teachers and specialists.

"THE RAPID DIAGNOSIS OF RABIES," by Langdon Frothingham, M.D.V. (Austin Teaching Fellow in Bacteriology, Harvard Medical School), is the title of a splendid article in the *Journal of Medical Research* for April, 1906. The recent extensive outbreak of rabies in Massachusetts has given Dr. Frothingham an opportunity to study the two chief methods of rapid diagnosis—the pathological changes in the nerve ganglia and the presence of the so-called Negri bodies. Among the conclusions of Dr. F. the following are noted: "The presence of Negri bodies is diagnostic for rabies, and, if found, animal inoculation is unnecessary. . . . The Ammon's horn is the most likely place to find Negri bodies; if not found in impression preparations of Ammon's horn, they must be sought for in sections. . . . If no Negri bodies can be found, and there are no lesions in the Gasserian ganglion, a negative report may be made; but if persons have been bitten, animal inoculations are advisable to allay apprehension."

THE AGGLUTINATION METHOD OF DIAGNOSING GLANDERS is being extensively tested by Dr. Veranus A. Moore, of Cornell, in connection with several practitioners of Brooklyn, the latter of whom supply Dr. Moore with specimens of blood from glandered or suspected cases. The results of the testing have been so accurate as proven by clinical symptoms, by subsequent development and by post-mortem findings that enthusiasm has been aroused, and Dr. George H. Berns is fitting up in his Brooklyn hospital a laboratory for the use of Mr. Cassius Way, assistant to Dr. Moore, where the tests can be made immediately after the withdrawal of blood. Dr. Way will spend his summer vacation in Brooklyn, and the practitioners will keep him well supplied with material, as it is always accessible in this hot-bed of glanders. Dr. Ackerman, veterinarian to the Health Depart-

ment, has had some remarkably accurate diagnoses from Dr. Moore. Veterinarians of New York City are urged to coöperate with Mr. Way to the end that a thorough test of the new method may be had, and accurate data furnished for the paper which Dr. Moore is preparing for the New Haven meeting of the A. V. M. A.

WHAT REVIEW SUBSCRIBERS SAY.

"THE REVIEW is better than ever. It is the 'solid extract' of the profession."—(*J. Payne Lowe, D. V. S., Passaic, N. J.*)

"I could not do without the REVIEW as its arrival is always a source of great pleasure."—(*F. E. Anderson, Findlay, Ohio.*)

"WE consider the REVIEW a very valuable publication, and indispensable to veterinarians."—(*Drs. Jones and Jones, Blanchester, Ohio.*)

"IF a veterinarian intends to be up-to-date he must be a faithful student of the AMERICAN VETERINARY REVIEW."—(*Charles Eastman, San Luis Obispo, Cal.*)

"PERMIT me to say that I have derived great benefit from the REVIEW, and find it always interesting, instructive and up-to-date."—(*J. Wigglesworth, V. S., Eau Claire, Wis.*)

"I CONSIDER THE REVIEW better than any reference book I could purchase. What we need is more interest taken in its Army Department by veterinarians of the regular service."—(*Charles H. Jewell, Vet. 13th Cav., U. S. Army.*)

"'SCHIER DREISZIG JAHRE BIST DU ALT, HAST MANCHEN STURM ERLERT' ['thirty years old are you, and many storms have you weathered]; but the adversities of the past have left no ear-mark on the REVIEW. No. 1, Vol. XXX, appears more pretentious than its predecessor. The REVIEW is easily the best value in veterinary periodicals.'"—(*Peter F. Bahnsen, V. S., Americus, Ga.*)

"I AM MORE AND MORE IMPRESSED with the obligation of the profession of this country to the REVIEW for the large amount of helpful veterinary literature placed in its hands regularly every 30 days. Only to those who have undertaken work of similar character is it possible to appreciate the labor and energy bestowed in order to produce such an excellent periodical. May the profession grow to more and more appreciate its value to them and give it their hearty financial support."—(*S. Stewart, M. D., D. V. M., Kansas City, Mo.*)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.....	Aug. 21-24, '06	N. Haven, Ct.	J. J. Repp. Phila., Pa.
Vet. Med. Ass'n of N. J.....	July 12-13, '06.	Asbury Park.	W. H Lowe, Paterson.
Connecticut V. M. Ass'n.....	Call of President	New Haven.	B. K. Dow, Willimantic.
New York S. V. M. Soc'y...	Sept. 11-12-13	Buffalo.	G. T. Stone, Binghamton.
Schuylkill Valley V. M. A....	June 20.	Reading.	W. G. Huyett, Wernersville.
Passaic Co V. M. Ass'n.....	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet Med. Ass'n.....	July 9, 1906.	Augusta.	R. E. Freeman, Dexter.
Central Canada V. Ass'n.....	.....	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n...	State Fair week	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y.-A. V. C..	April, 1907.	141 W. 54th St	W. C. Miller, N Y. City.
Illinois State V. M. Ass'n.....	July 12, 1906.	Bloomington.	F. H. Barr, Pana.
Wisconsin Soc. Vet. Grad.....	Call of Pres't.	Sheboygan.	S. Beattie, Madison.
Illinois V. M. and Surg. A....	.....	Decatur.	C. M. Walton. Rantoul.
Vet. Ass'n of Manitoba	Not Stated.	Winnipeg.	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n...	.....	.....	T. B. Carroll, Wilmington.
Ontario Vet. Ass'n.....	.....	....	C. H. Sweetapple, Toronto.
V. M. Ass'n New York Co....	1st Wed. May	141 W. 54th St	D. J. Mangan, N. Y. City.
Ohio State V. M. Ass'n.....	....	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n...	1st Wed. ea. mo	Pittsburgh.	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n...	July 12, 1906..	Roch t'r, N.Y.	J. H. Taylor, Henrietta, N.Y.
Iowa State V. M. Ass'n.....	.....	....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n..	July, 11, 12, '06	Minneapolis.	C. A. Mack, Stillwater.
Pennsylvania State V. M. A...	.....	.....	C. J. Marshall, Philadelphia
Keystone V. M. Ass'n.....	2d Tues. May	Philadelphia.	A. W. Ormeston, 102 Herman St., Germantown, Pa.
Colorado State V. M. Ass'n...	1st Mon. in June	Denver.	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n	.....	....	B. F. Kaupp, Kansas City
Rhode Island V. M. Ass'n....	June and Dec.	Providence.	T. E. Robinson, Westerly, R. I
North Dakota V. M. Ass'n....	.....	.....	J A. Winsloe, Cooperstown.
California State V. M. Ass'n...	Mch. Je. Sep, Dc	San Francisco	C. H. Blemer, San Francisco.
Southern Auxiliary of California State V. M. Ass'n....	Jan. Apl. Jy, Oct.	Los Angeles.	J. A. Edmons, Los Angeles.
South Dakota V. M. A.....	July, 1906.	Brookings.	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.....	.....	.....	Hans Jenson, Weeping Water
Kansas State V. M. Ass'n.....	Jan. 8-9, '07.	Topeka.	Hugh S. Maxwell, Salina.
Ass'n Médécale Veternaire Francaise "Laval,".....	1st & 3d Thur. of each month.	Lect. R'm Laval Un'y Mon.	J. P. A. Houde, Montreal.
Alumni Association A. V. Col..	April each yr.	New York.	F. R. Hanson, N. Y. City.
Province of Quebec V. M. A...	.....	Mon. & Que.	Gustave Boyer, Rigand, P.Q.
Kentucky V. M. Ass'n.....	.....	.....	D. A. Piatt, Lexington.
Washington State Col. V. M. A.	Monthly.	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.	.....	....	E. M. Bronson, Indianapolis.
Iowa-Nebraska V. M. Ass'n..	.....	.....	A. T. Peters, Lincoln, Neb.
Louisiana State V. M. Ass'n..	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	.....	.....	S. H Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A....	.....	Cincinnati.	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n..	August, 1906.	Agricultural College.	J. C. Robert, Agricultural College.

PUBLISHERS' DEPARTMENT.

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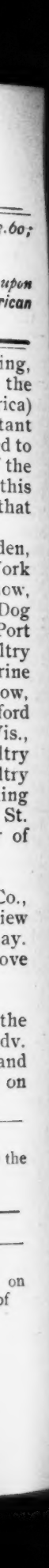
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